THE NATCO DOUBLE HOUSE

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The Natco Double House

SEMI-DETACHED

ATTRACTIVE
ECONOMICAL
DURABLE
FIREPROOF

PRICE, FIFTY CENTS

Published for the
NATIONAL FIRE PROOFING COMPANY
PITTSBURGH

BY ROGERS AND MANSON COMPANY
BOSTON

Semi-Detached Cottages of Natco XXX Hollow Tile.

FOREWORD.

IN the suburban sections of our larger cities and towns it is becoming more and more difficult for the average man to find a suitable dwelling place for a reasonable rental. It is often too expensive for him to afford a single residence and he is therefore obliged to adopt some form of apartment living by necessity. The speculative builder has contributed the wooden three apartment house commonly termed the "three decker" as his solution of the problem. This type, however, it is being conclusively proven in almost every section where it has been introduced, does not offer a satisfactory solution. Houses of this class are too often built in a careless way, observing only such regulations of the local building department as are absolutely required. They deteriorate rapidly and the man who buys for a home as well as an investment, to be gained from the rental of the other apartments, soon finds that all the income is required for repairs if its rental value is to be maintained.

On the other hand the semi-detached or two family house of which this book treats presents all the advantages of another type of dwelling. Here each family is able to have the use of two floors and an attic, besides having equal access to both front and rear yards. There is a further advantage in that the external appearance may be made as attractive as that of any single house and it will not lower real estate values in any community as the usual three flat type of house surely will.

In a house built for part renting it is of even greater importance than in one built solely for ones home that the cost of maintenance should be kept as low as possible. This means that a wise selection must be made for the building materials. They should be those which will incur the lowest initial cost without the necessity of future expense in painting and continual repairs.

The material meeting these demands successfully is Natco XXX Hollow Tile, which is a hard burned clay block (illustrations of blocks and construction shown on page 80). The centre of the blocks are hollow and they are laid in the wall so that they form an air space which is continuous from foundation to roof. This provides an insulating space which makes a house built from this material warm in winter and cool in summer. The blocks may be plastered directly on the inside without any furring or lathing and the exterior is given a finish of cement stucco.

Such construction is enduring and calls for very little expenditure for upkeep. Its cost is but slightly higher than all wood construction and if the repairs to a wooden house are taken into consideration in a very few years the original cost of the hollow tile house is no greater than that of a wooden building.

It is of almost equal importance with its durability that a house which is to be a paying investment for its owner should present a good appearance and be built from a pleasing architectural design. The designs for two family houses shown in this book were submitted in competition by many of the leading architectural draughtsmen in this country and are suggestive of many treatments in elevation and plan that are wholesome, refined and practical.

It may be said by way of explanation of the estimated cost of these house designs that the only requirements imposed upon the designer were a limit of cubical contents for both houses of 45,000 cubic feet and the total cost not to exceed $9,000. On this basis the cost per cubic foot would be 20 cents, although in some sections of the country it would undoubtedly be somewhat higher, depending upon the promimity of the site to source of supply and local labor conditions, but in general this price would be a reasonable figure for a small house with simple interior finish. It can readily be seen that any more arbitrary and binding restrictions as to cost would defeat the purpose of the competition—which was to obtain a variety of treatment of both exterior and plan which could be appropriately built of the material recommended for their construction, Natco XXX Hollow Tile.

Thus, while all the designs come within the limit of cubage, it is evident that many of them would need to be simplified in construction to make them come within the limit of cost set. For instance, a house having a simple roof, unbroken by dormers or gables and with a simple porch at either front or side, could be built at a lower price than a smaller house which had a complex roof and one or more extensions to the main building.

Following the presentation of the designs submitted in this competition are shown several semi-detached houses of moderate cost which have been built of Natco XXX Hollow Tile by well known architects and which show how attractive a house built from this material may be made.

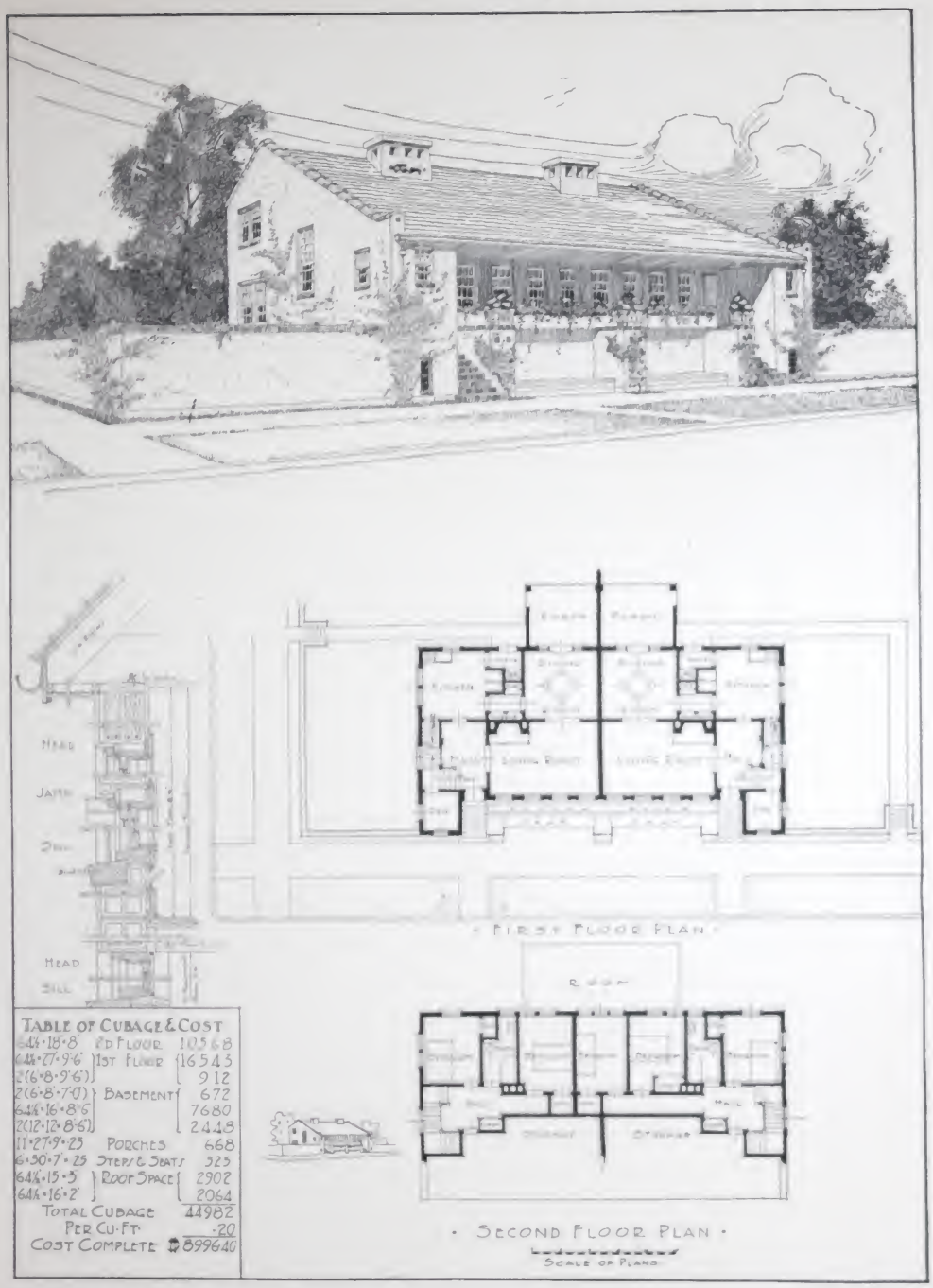
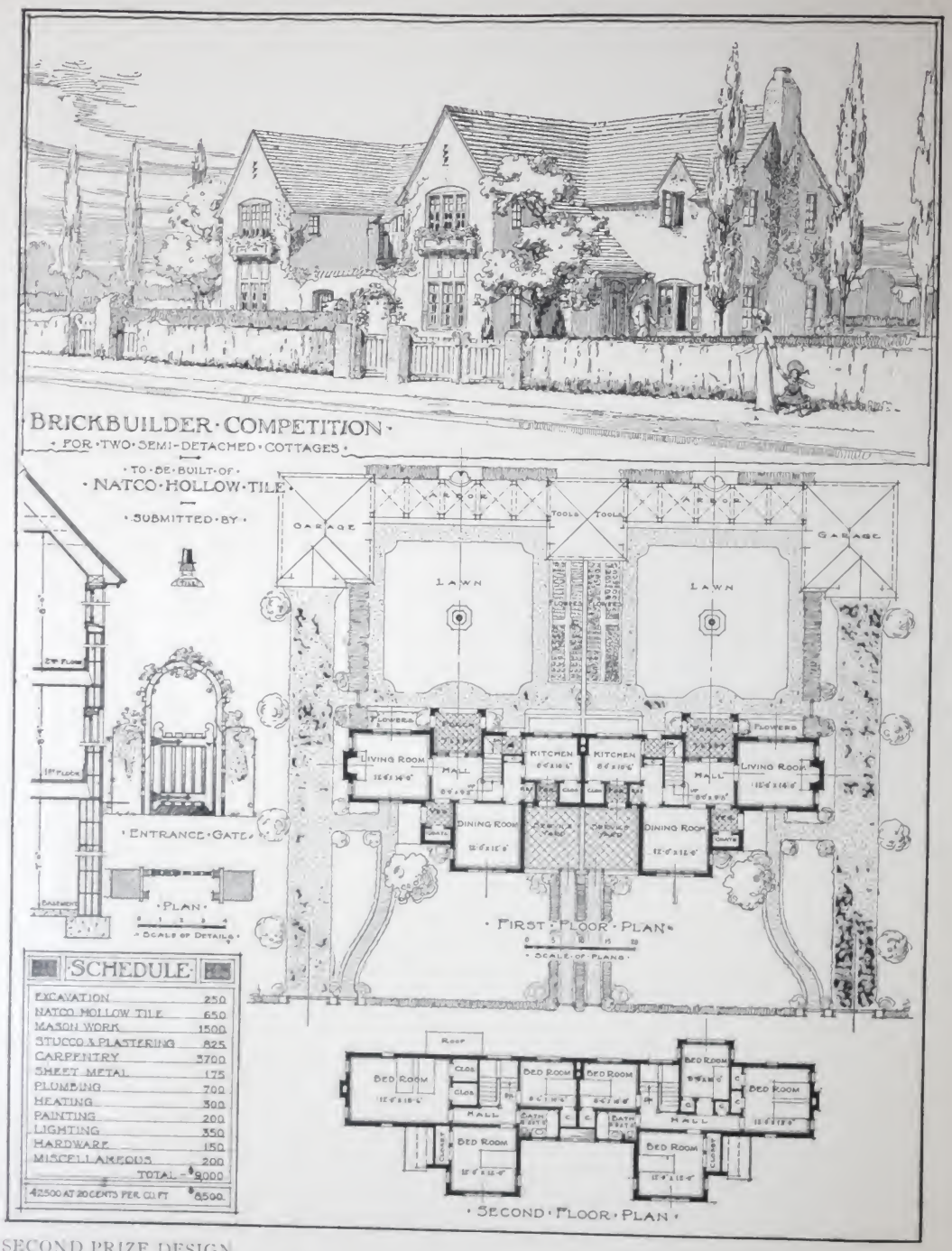
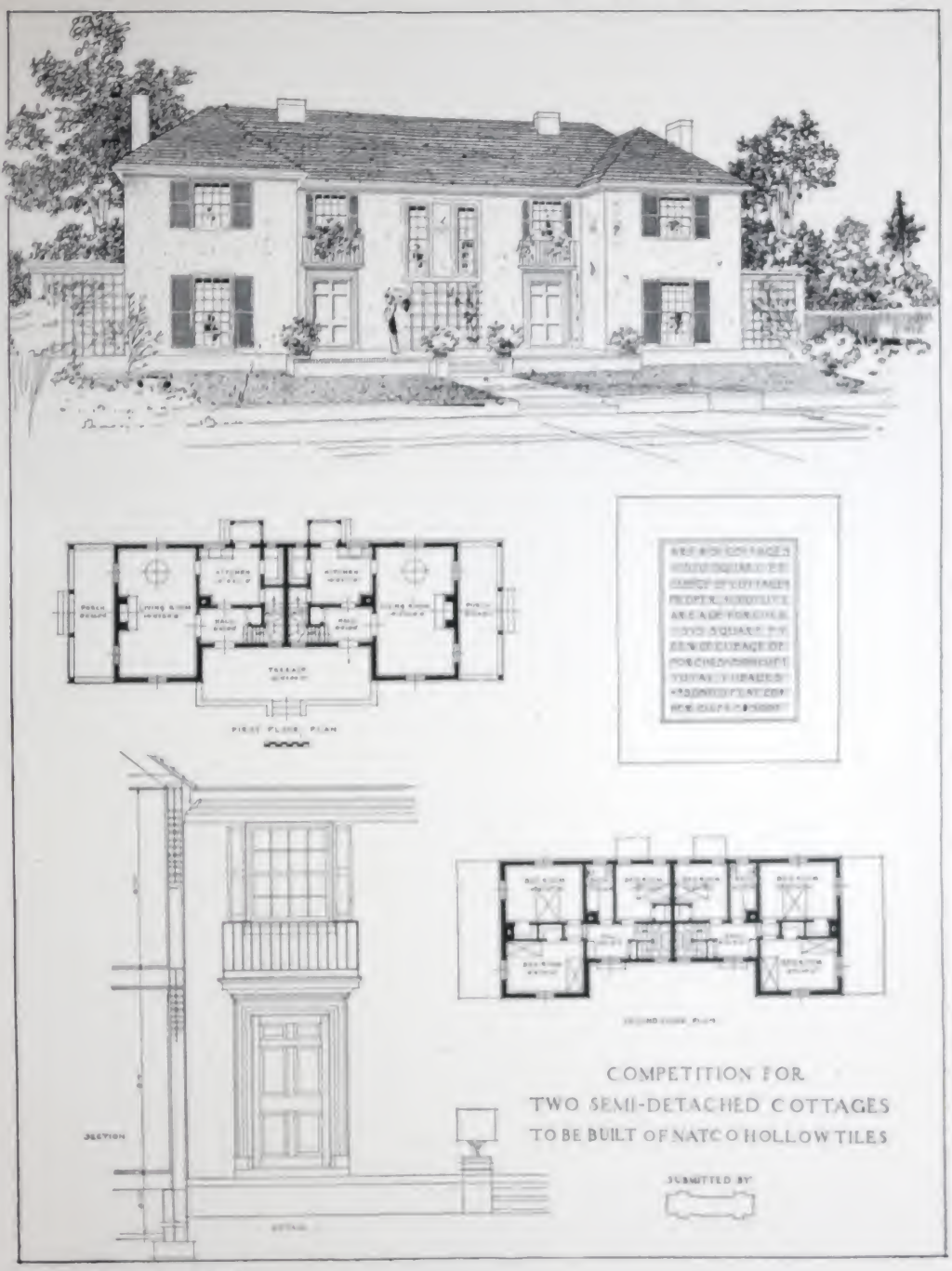


TABLE OF CUBAGE & COST		
64'-18'-8	2D FLOOR	10568
64'-27'-9'6"	1ST FLOOR	16545
2(6'-8'-9'6")		912
2(6'-8'-7'0")	BASEMENT	672
64'-16'-8'6"		7680
2(12'-12'-8'6")		2448
11'-27'-9'-25	PORCHES	668
6'-30'-7'-25	STEPS & SEATS	325
64'-15'-5	ROOF SPACE	2902
64'-16'-2'		2064
TOTAL CUBAGE		44982
PER CU. FT.		.20
COST COMPLETE		$8996.40

FIRST PRIZE DESIGN
Submitted by Herbert A. Sullwold,
1011 Commerce Building, St. Paul, Minn.

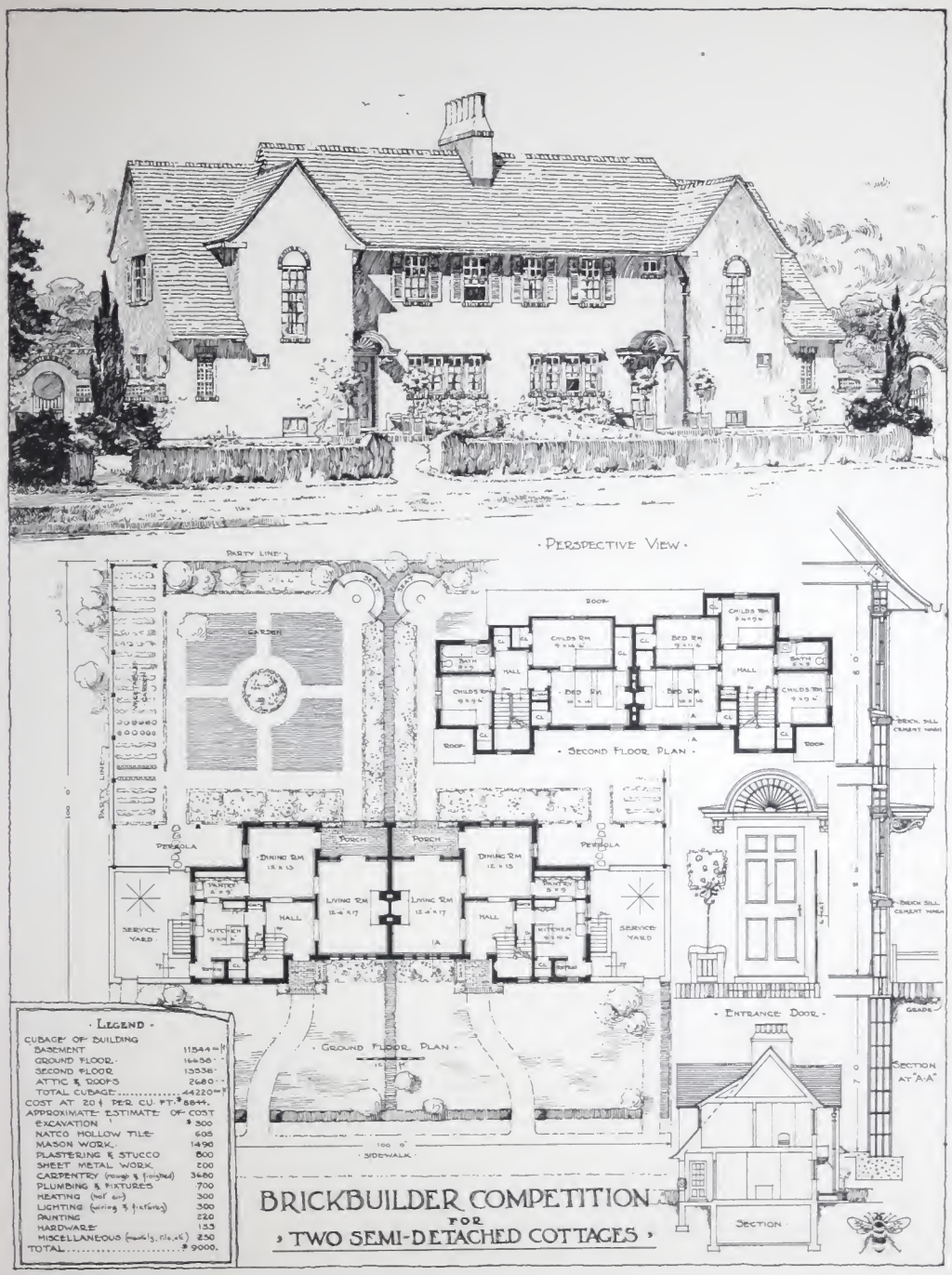


SECOND PRIZE DESIGN
Submitted by John Almy Tompkins, 2nd, and Harry Brodsky,
20 West 43d Street, New York, N. Y.

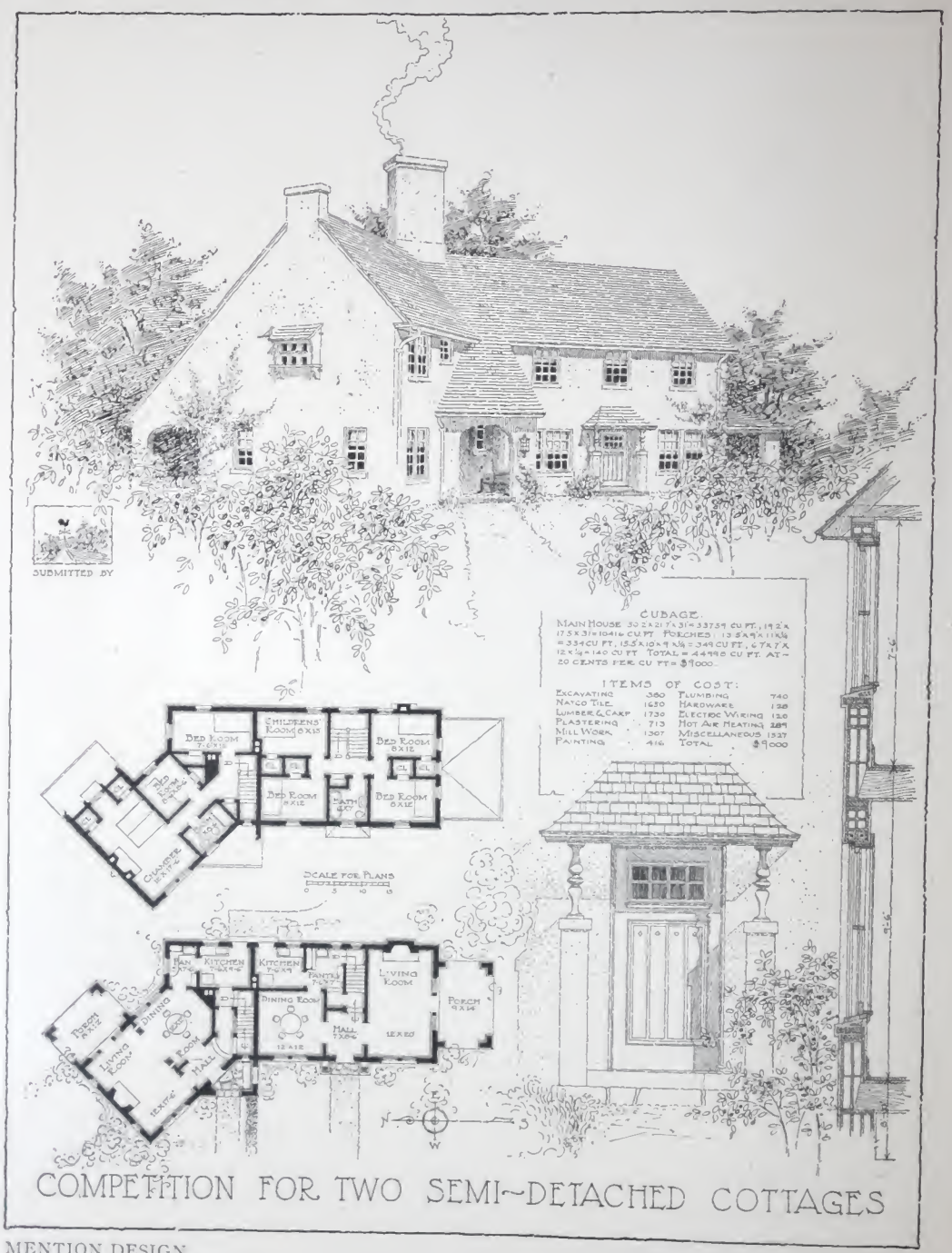


THIRD PRIZE DESIGN
Submitted by Louis Schalk and Francis D. Bulman,
1135 Merchants Exchange, San Francisco, Cal.

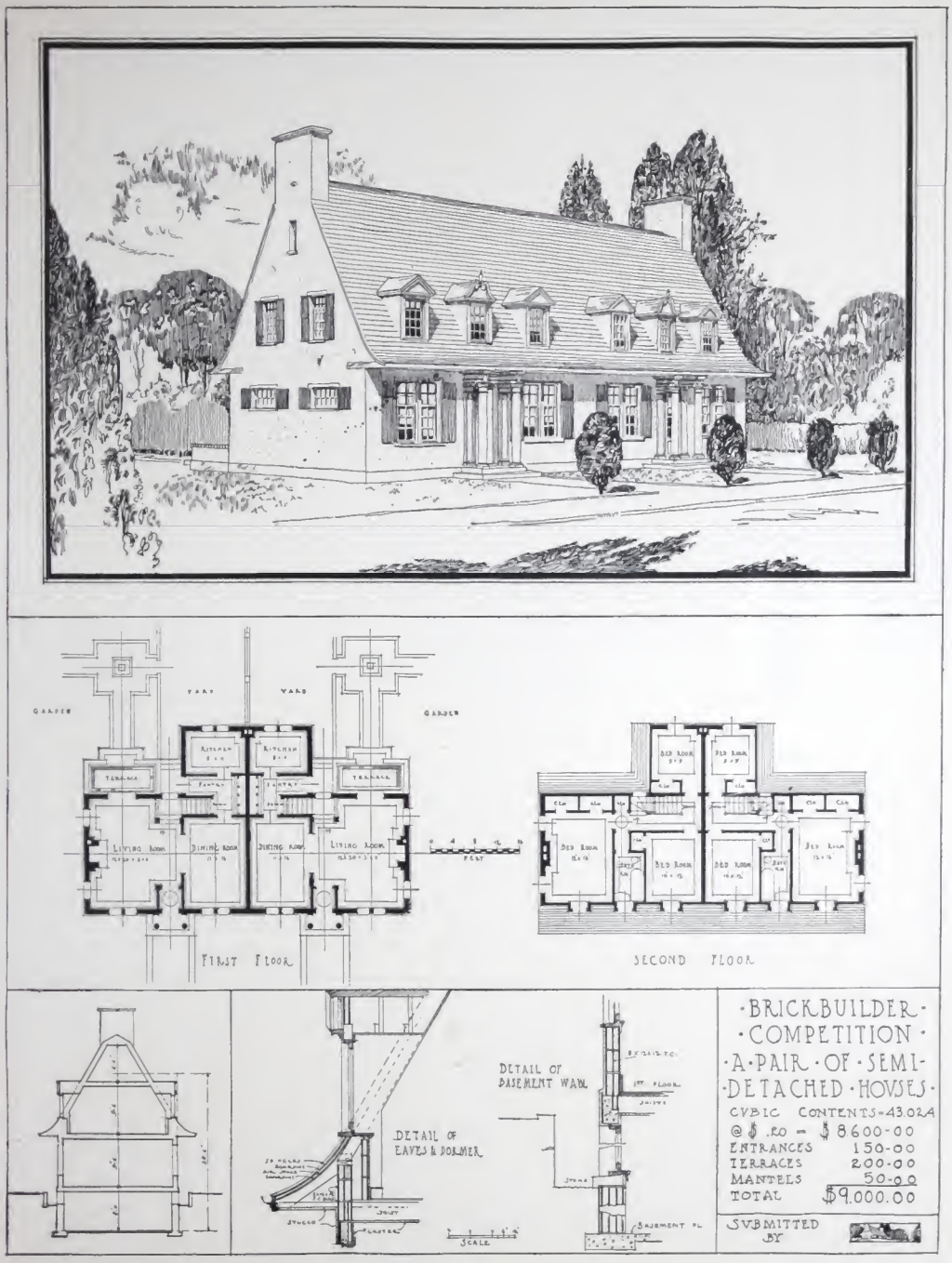
FOURTH PRIZE DESIGN
Submitted by Alfred Cookman Cass,
77 Washington Place, New York, N. Y.



MENTION DESIGN
Submitted by Roger H. Bullard,
20 West 43d Street, New York, N. Y.

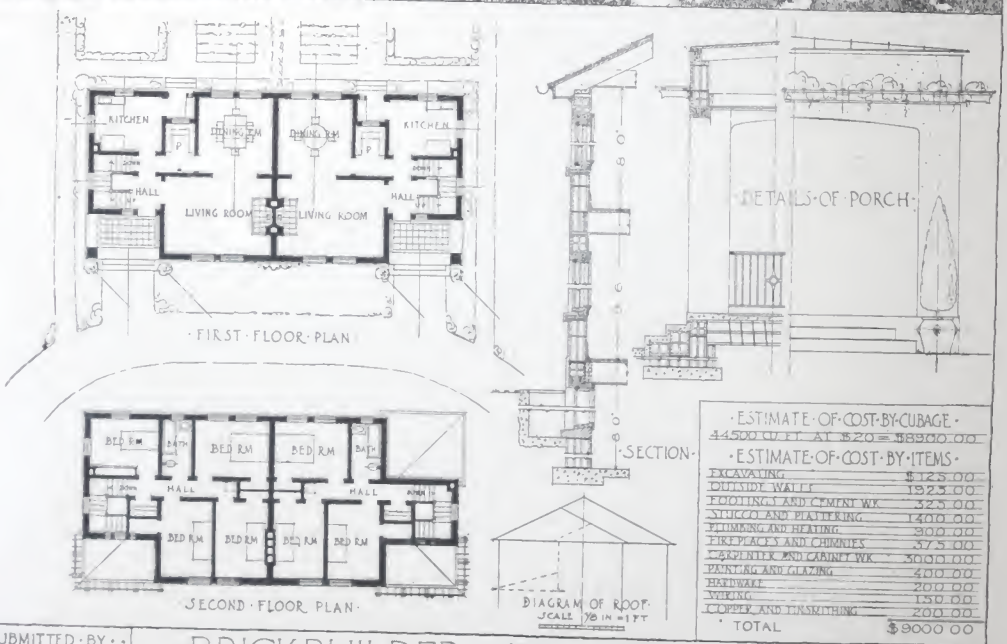


MENTION DESIGN
Submitted by Paul C. Dunham,
300 Cumberland Street, Brooklyn, N. Y.

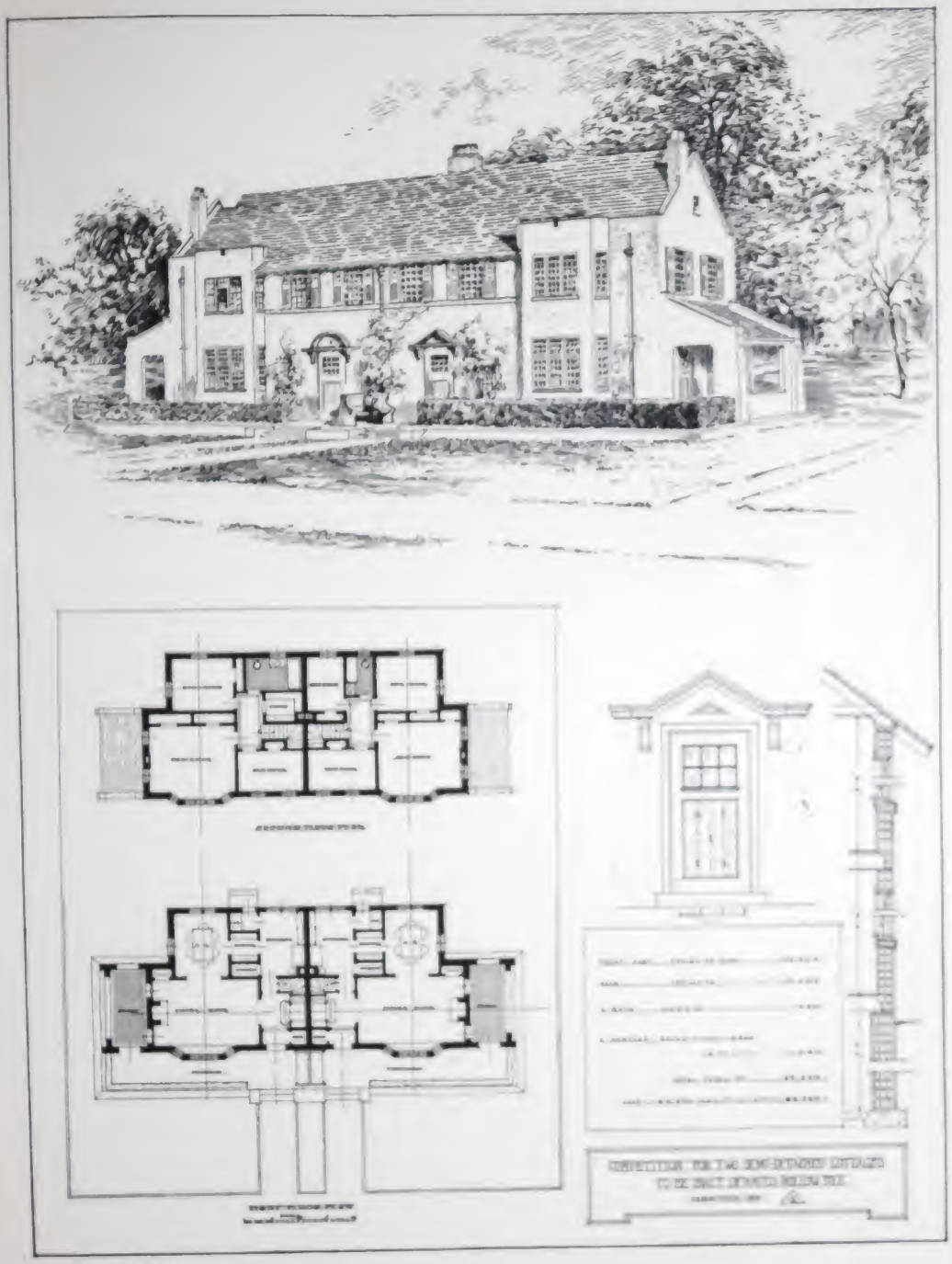


MENTION DESIGN
Submitted by S. Douglas Ritchie,
46 Beaver Hall Hill, Montreal, Que., Can.

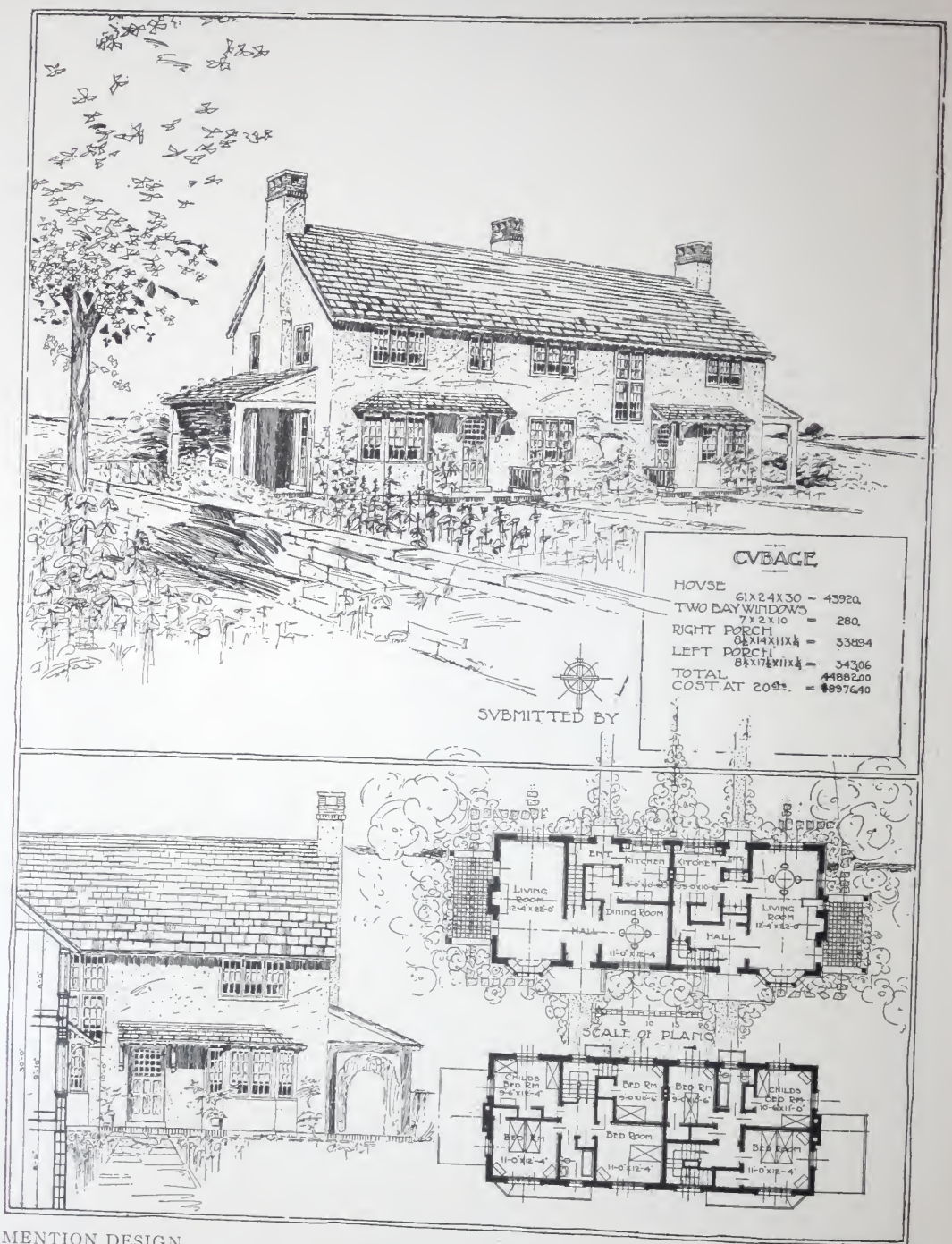
THE NATCO DOUBLE HOUSE



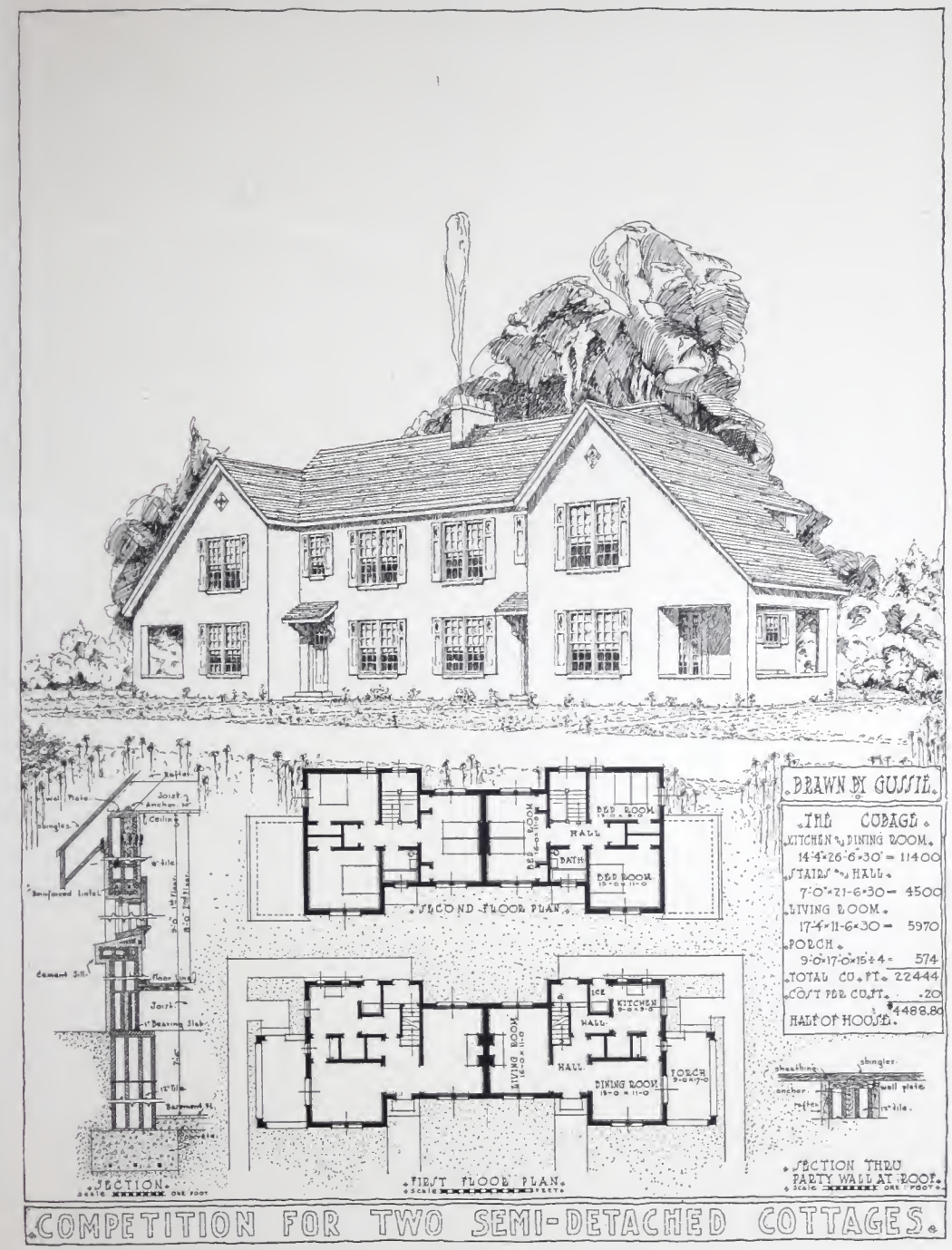
MENTION DESIGN
Submitted by H. K. Culver,
533 West 158th Street, New York, N. Y.



MENTION DESIGN
Submitted by Robert L. Stevenson,
346 Fourth Avenue, New York, N. Y.

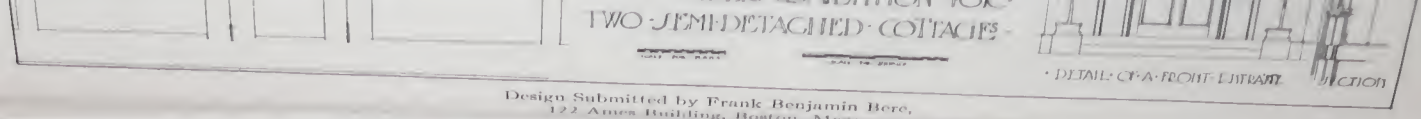


MENTION DESIGN
Submitted by Lester E. Varian,
464 Gas & Electric Building, Denver, Colo.

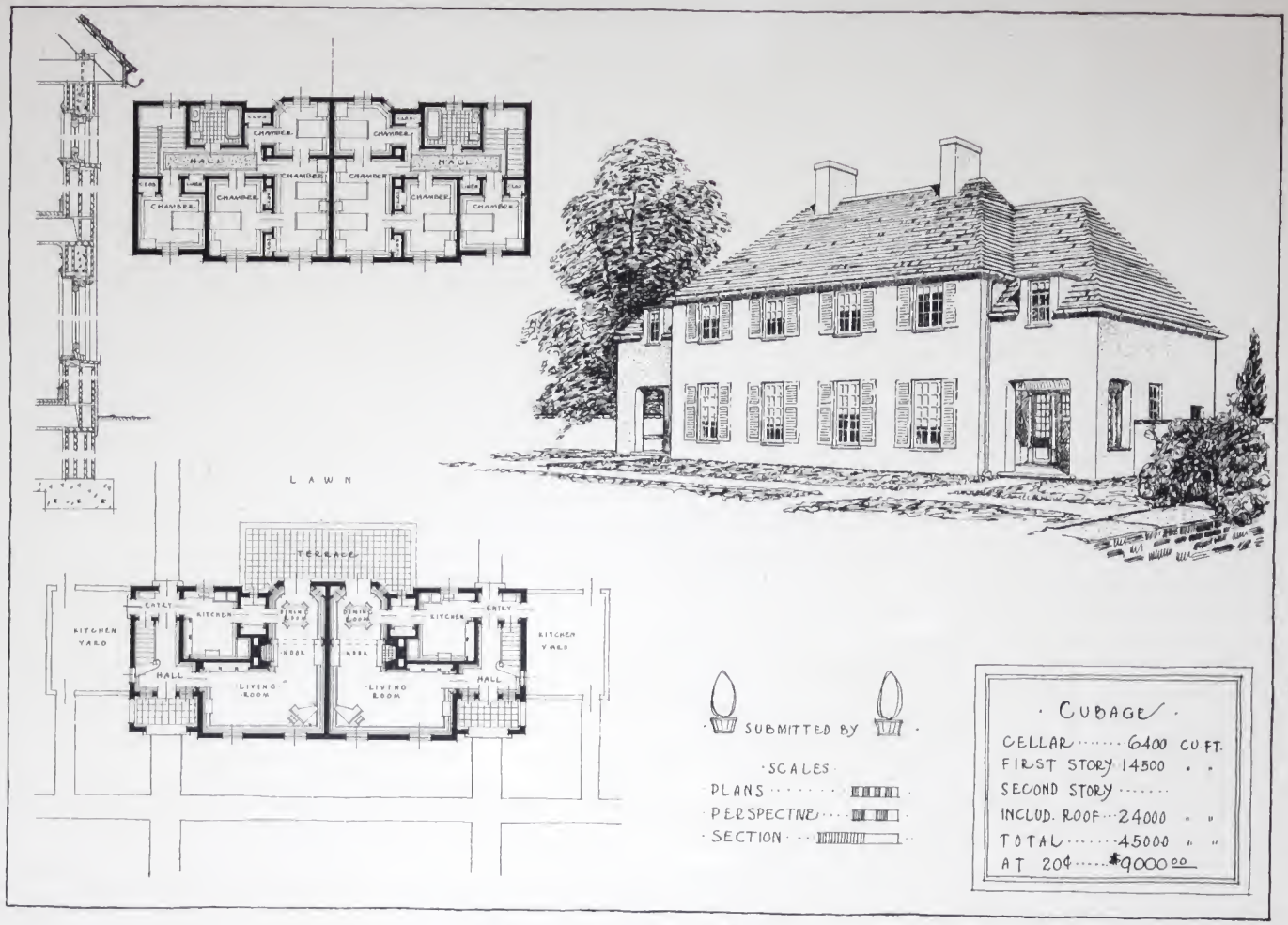


Design submitted by Edw. J. Thole,
1006 Vine Street, Evansville, Ind.

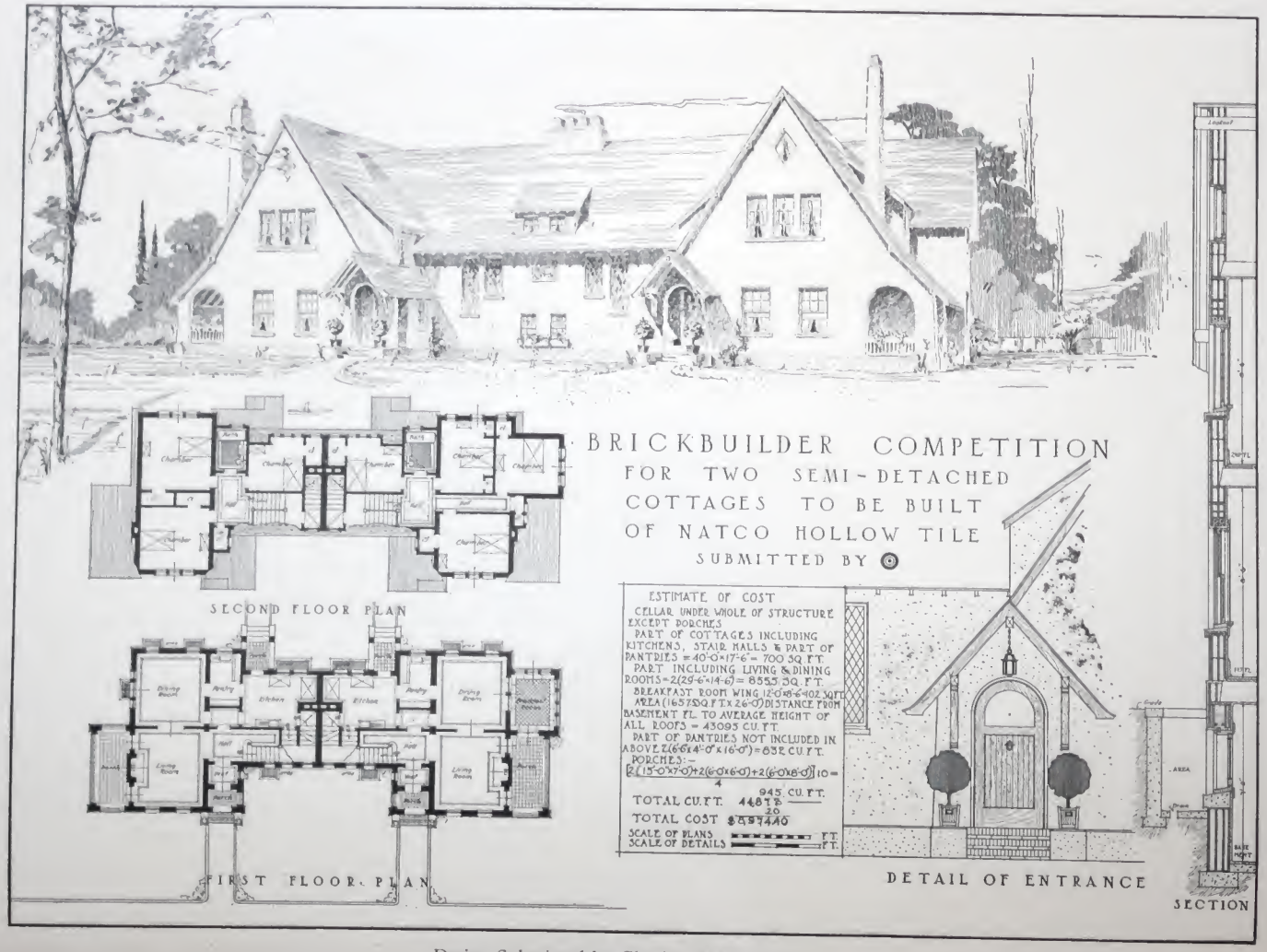
Design Submitted by Frank Benjamin Bere,
122 Ames Building, Boston, Mass.



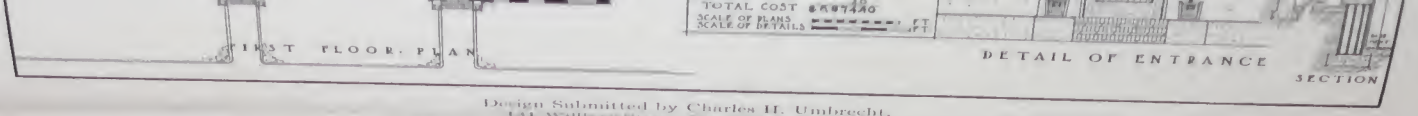
Design Submitted by Frank Benjamin Bere,
122 Ames Building, Boston, Mass.



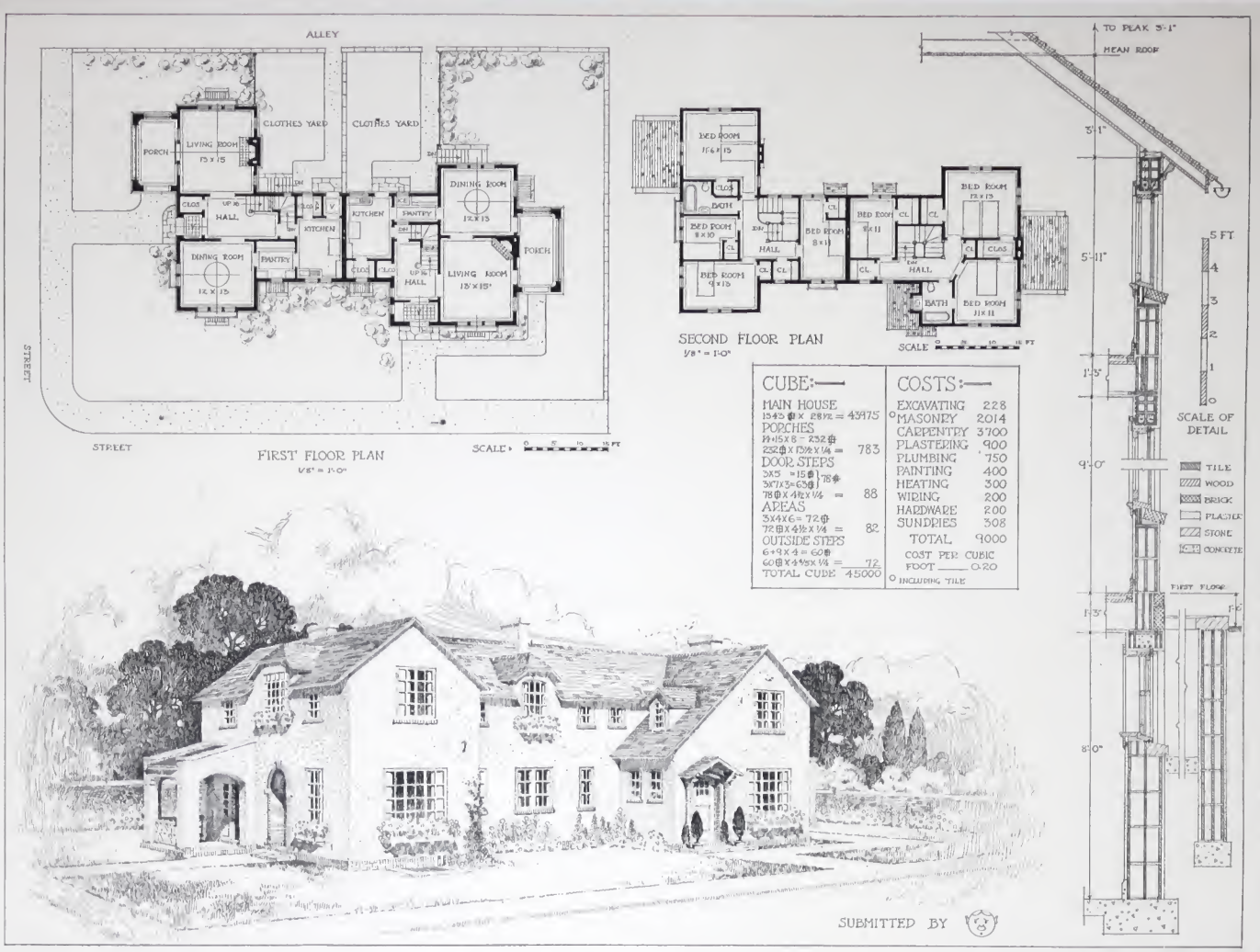
Design Submitted by Charles M. Foster,
503 West 158th Street, New York, N. Y.



Design Submitted by Charles H. Umbrecht,
131 William Street, East Orange, N. J.



Design Submitted by Charles H. Umbrecht,
131 Wall Street, Lockport, N. Y.



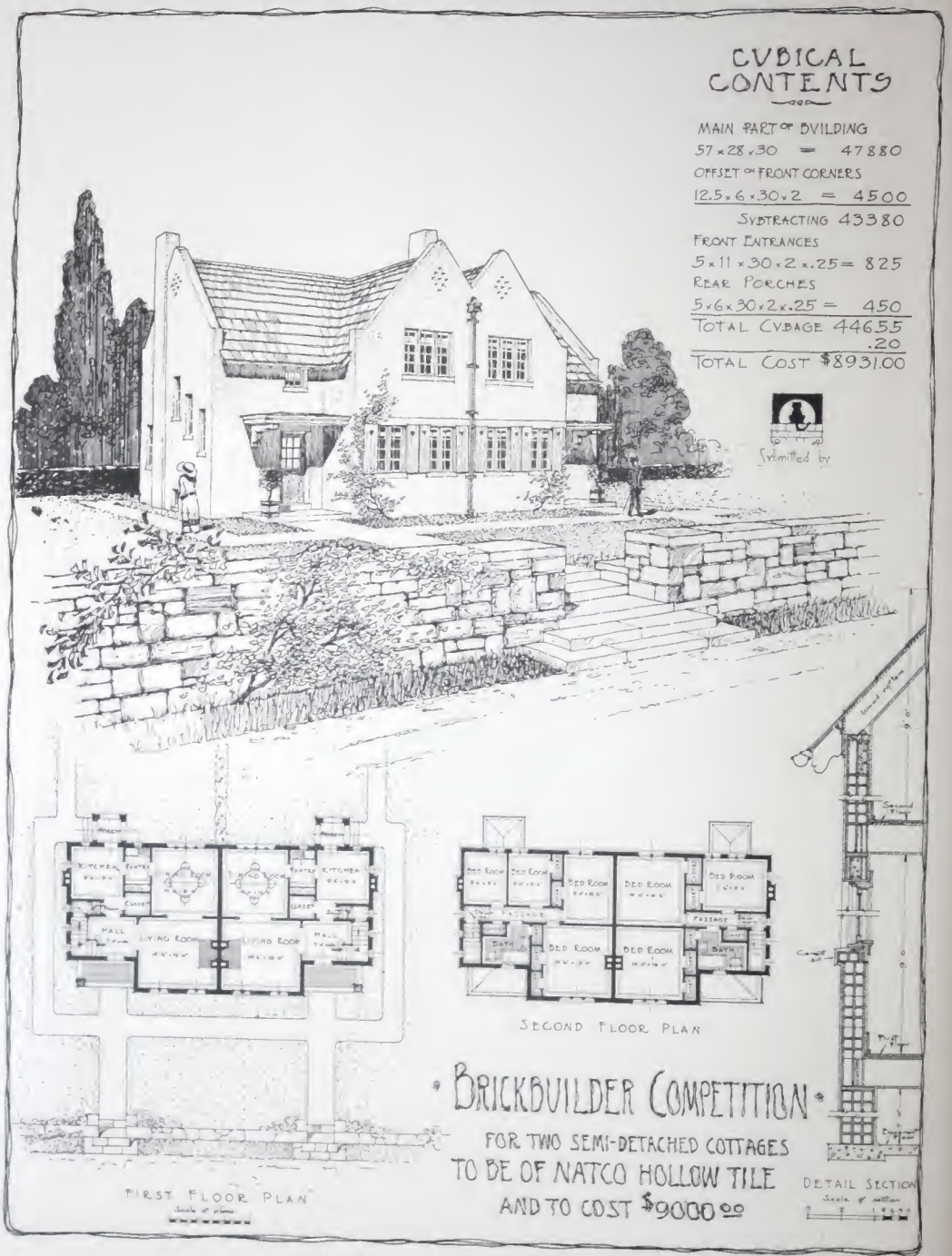
CUBE:	
MAIN HOUSE	
1545 □' X 28½' =	43975
PORCHES	
14+15X8 = 252 □'	
252 □' X 13½' X ¼ =	783
DOOR STEPS	
3X5 = 15 □'	78 □'
3X7X3=63 □'	
78 □' X 4½' X ¼ =	88
APRONS	
3X4X6 = 72 □'	
72 □' X 4½' X ¼ =	82
OUTSIDE STEPS	
6+9X4 = 60 □'	
60 □' X 4½' X ¼ =	72
TOTAL CUBE	45000

COSTS:	
EXCAVATING	228
°MASONRY	2014
CARPENTRY	3700
PLASTERING	900
PLUMBING	750
PAINTING	400
HEATING	300
WIRING	200
HARDWARE	200
SUNDRIES	308
TOTAL	9000
COST PER CUBIC FOOT	0.20

° INCLUDING TILE

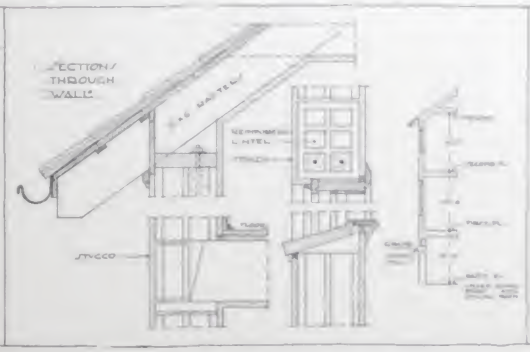
SUBMITTED BY

Design Submitted by Austin D. Jenkins,
1043 Rush Street, Chicago, Ill.

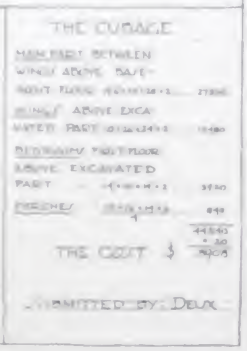


Design Submitted by George W. Frech,
69 East McMicken Avenue, Cincinnati, Ohio.

BRICKBUILDER COMPETITION FOR TWO SEMIDETACHED COTTAGES OF HOLLOW NATCO TILE

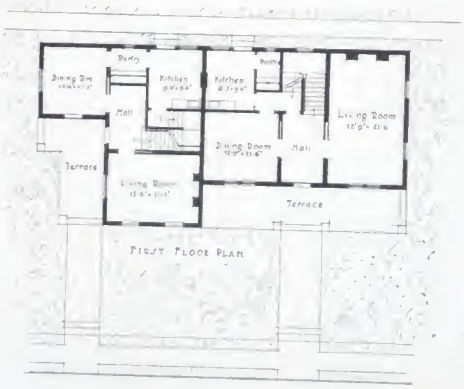


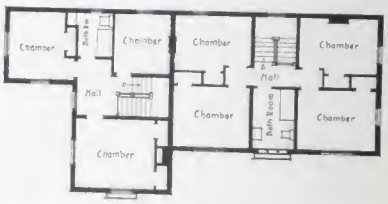
THE CUBAGE

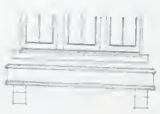


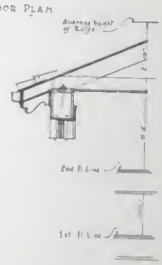
Design Submitted by C. A. Nilson,
830 Washington Street, Dorchester, Mass.

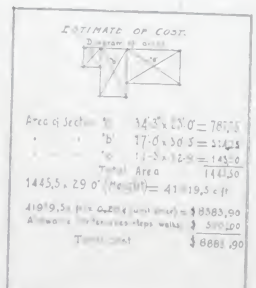
THE NATCO DOUBLE HOUSE







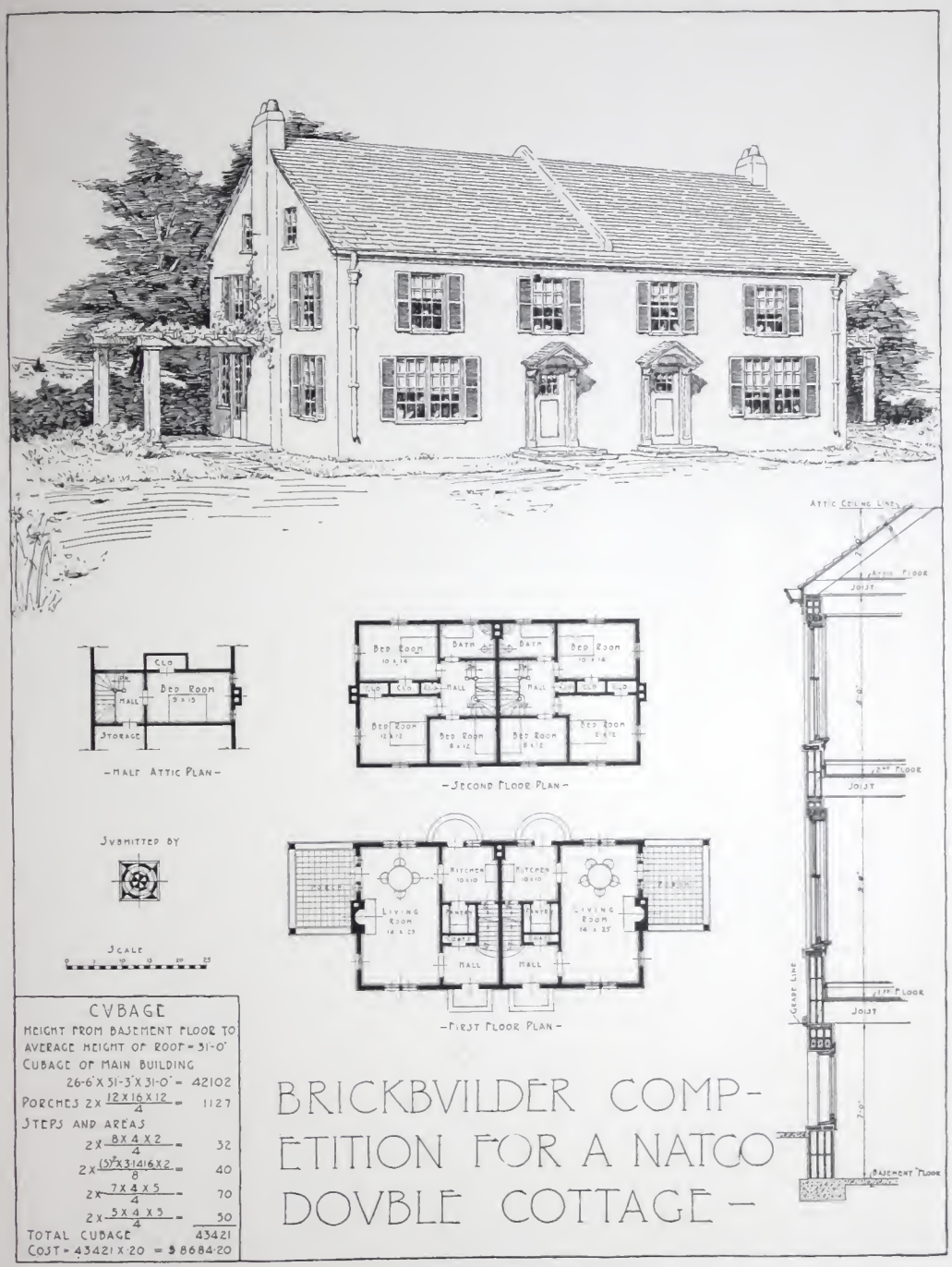




TWO
SEMI DETACHED
NATCO COTTAGES

SUBMITTED
BY
Stebar

Design Submitted by Vincent Piacentini,
4119 Morgan Street, St. Louis, Mo.



CUBAGE

HEIGHT FROM BASEMENT FLOOR TO AVERAGE HEIGHT OF ROOF = 31-0'

CUBAGE OF MAIN BUILDING

26-6' X 51-3' X 31-0' = 42102

PORCHES $2 \times \frac{12 \times 16 \times 12}{4}$ = 1127

STEPS AND AREAS

$2 \times \frac{8 \times 4 \times 2}{4}$ = 32

$2 \times \frac{(5)^2 \times 3.1416 \times 2}{8}$ = 40

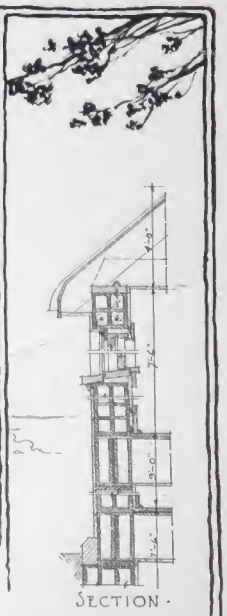
$2 \times \frac{7 \times 4 \times 5}{4}$ = 70

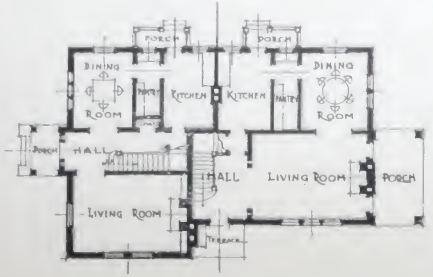
$2 \times \frac{5 \times 4 \times 5}{4}$ = 50

TOTAL CUBAGE 43421

COST = 43421 X .20 = $ 8684.20

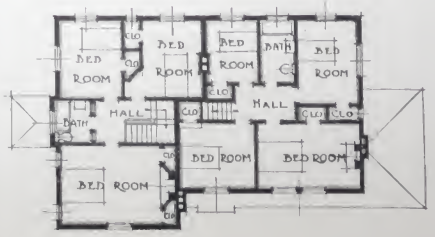
Design Submitted by Frank S. Carson,
North Bay, Ont., Can.





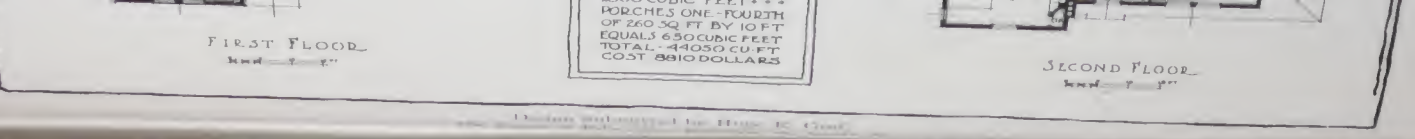
FIRST FLOOR

CUBIC CONTENTS OF HOUSE. · FIGURED IN THREE SECTIONS THE MAIN PORTION 29 FEET BY 50 BY 28 FEET HIGH EQUALS 40600 CUBIC FEET · PROJECTION 100 SQUARE FEET BY 28 FEET HIGH EQUALS 2800 CUBIC FEET · · · PORCHES ONE-FOURTH OF 260 SQ FT BY 10 FT EQUALS 650 CUBIC FEET TOTAL - 44050 CU FT COST - 8810 DOLLARS



SECOND FLOOR

Design Submitted by Hugo K. Graf,
408 Board of Education Building, St. Louis, Mo.



Design submitted by House & Garden

CUBAGE

MAIN PART [illegible]

PROJECTING PART OF KITCHENS [illegible]

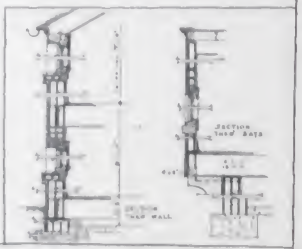
2½ STORY BAYS [illegible]

PORCHES [illegible] 1066

TOTAL CONTENTS 44134

COST A CUBIC FOOT .20

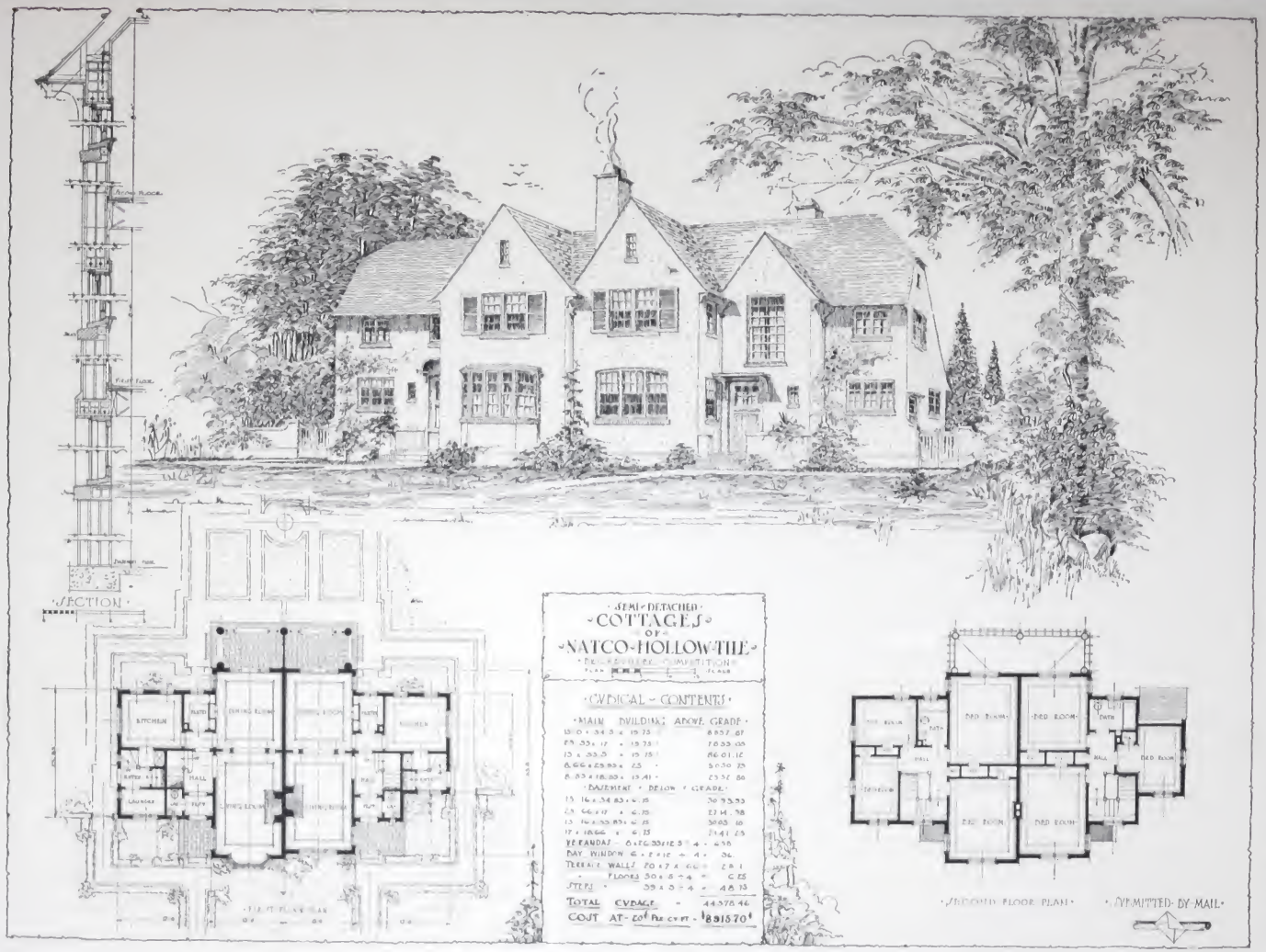
TOTAL COST 8826.80



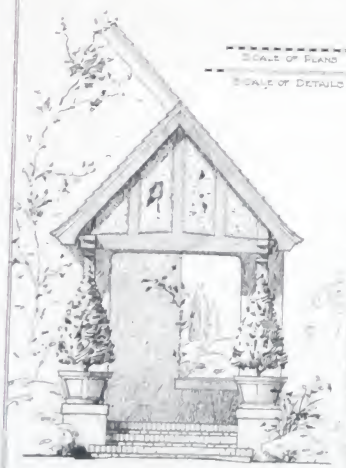
JUNE 22, 1910 TWO · SEMI-DETACHED · COTTAGES SUBMITTED BY [illegible]

Design Submitted by Porter W. Scott,
480 Clinton Avenue, Brooklyn, N. Y.

Design Submitted by Lester E. Varian,
464 Gas & Electric Building, Denver, Colo.



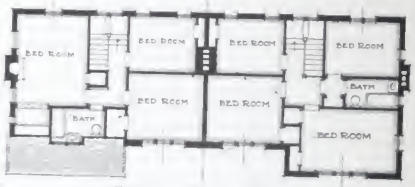
Design Submitted by Elbert J. Richmond,
Second National Bank Building, New Haven, Conn.



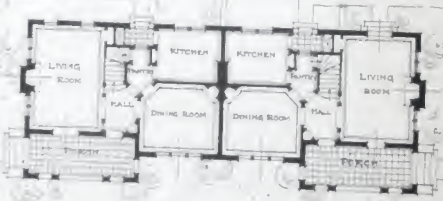
DETAIL AT ENTRANCE

SCALE OF PLANS

SCALE OF DETAILS



SECOND FLOOR PLAN



FIRST FLOOR PLAN

CUBAGE

MAIN GABLE (183 × 48 × 30.5)	=	268800
HIGH CROSS GABLE — EXCL. UNDER PORCH 193 × 15 × 30.5	=	44823
DORMER LOW GABLE ROOF CONNECTIONS	=	744.00
PORCH AT LOW ROOF 4 (39.5 × 15 × 4)	=	340.44
ENTRANCE HOODS 2 (7.5 × 14 × 4)	=	157.90
TOTAL	=	445823

445823 CU. FT. × 80 = 8915.72

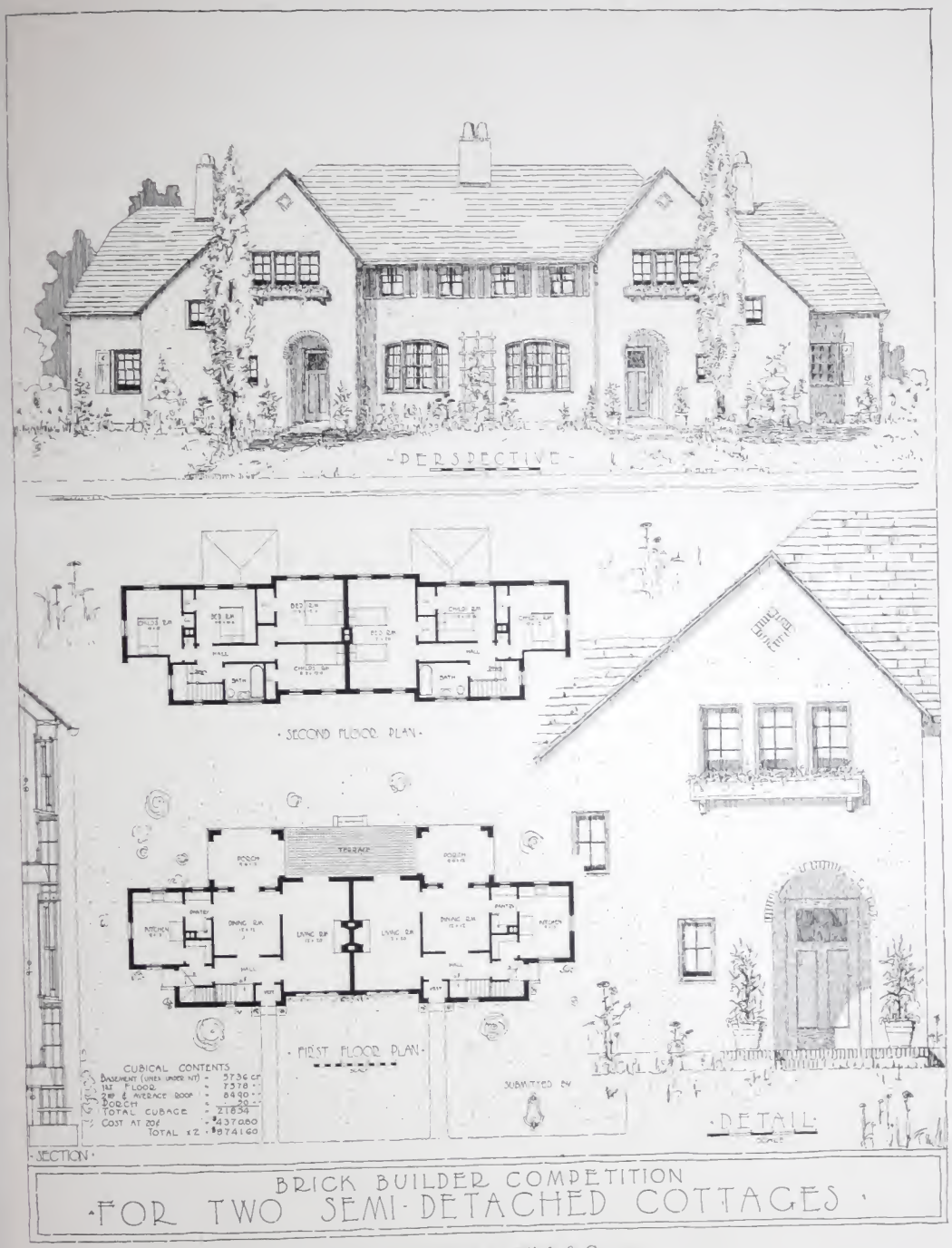
COSTS

MASON WORK, STUCCO, PLASTERING	$1800.00
CARPENTRY, SHEET METAL	3400.00
PLUMBING	800.00
HEATING	500.00
ELECTRIC WORK	200.00
PAINTING	400.00
HARDWARE	900.00
	9000.00

BRICKBUILDER COMPETITION
TWO SEMI-DETACHED COTTAGES
OF NATCO HOLLOW TILE

DRAWN BY HAND

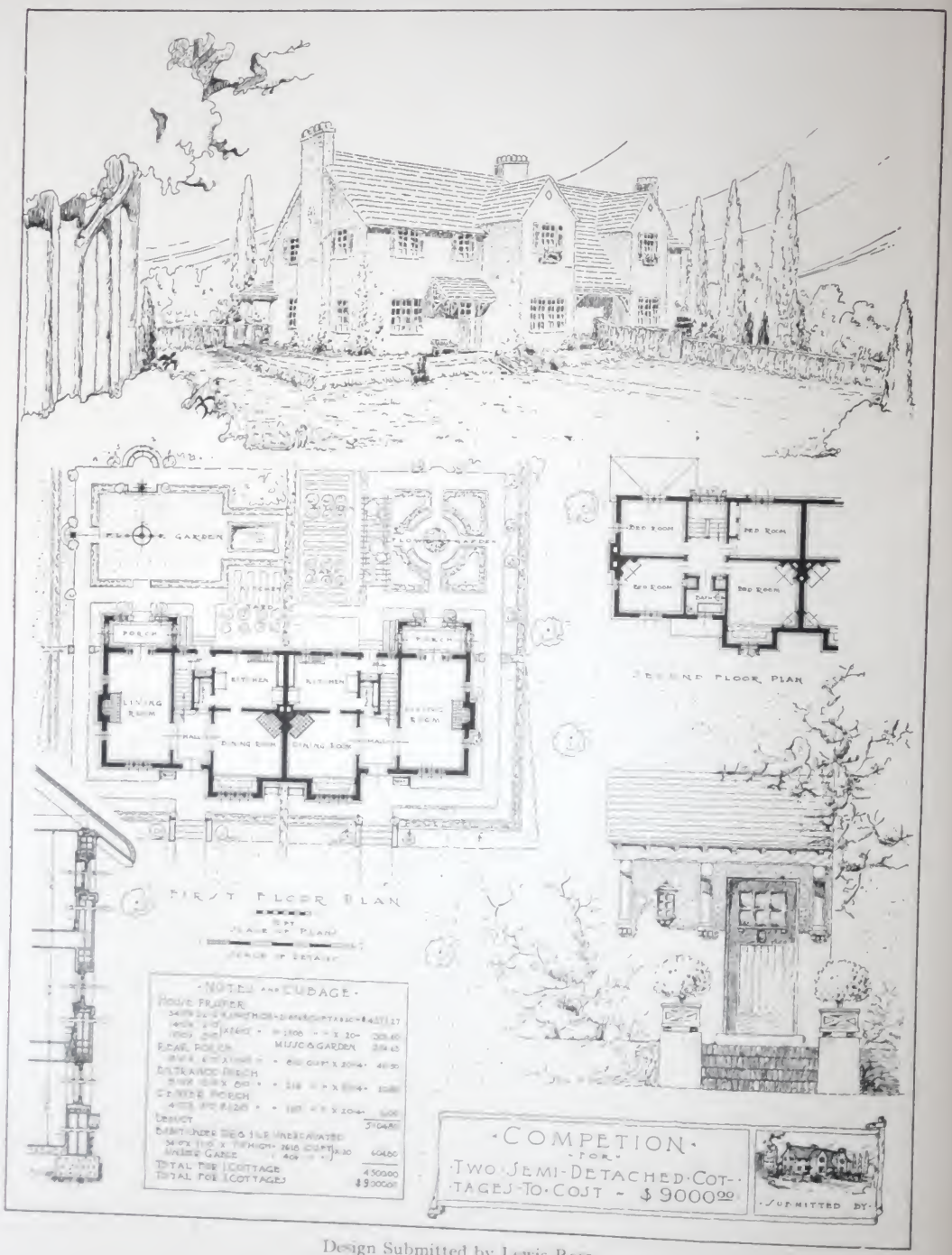
Design Submitted by Charles C. May,
29 East 4th Street, Mt. Vernon, N. Y.



BRICK BUILDER COMPETITION

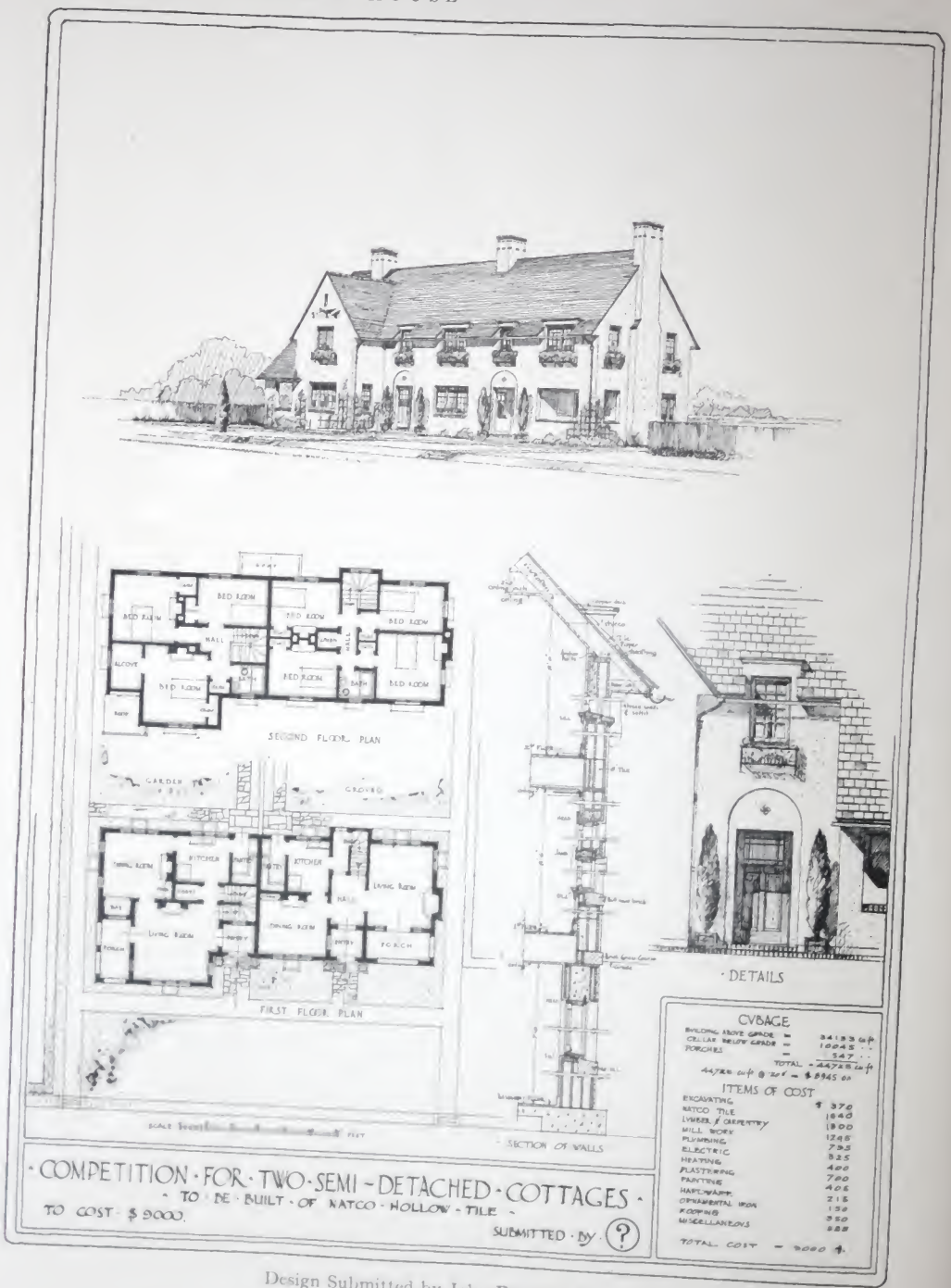
FOR TWO SEMI-DETACHED COTTAGES

Design Submitted by Mink & Carson,
7 East 42nd Street, New York, N. Y.

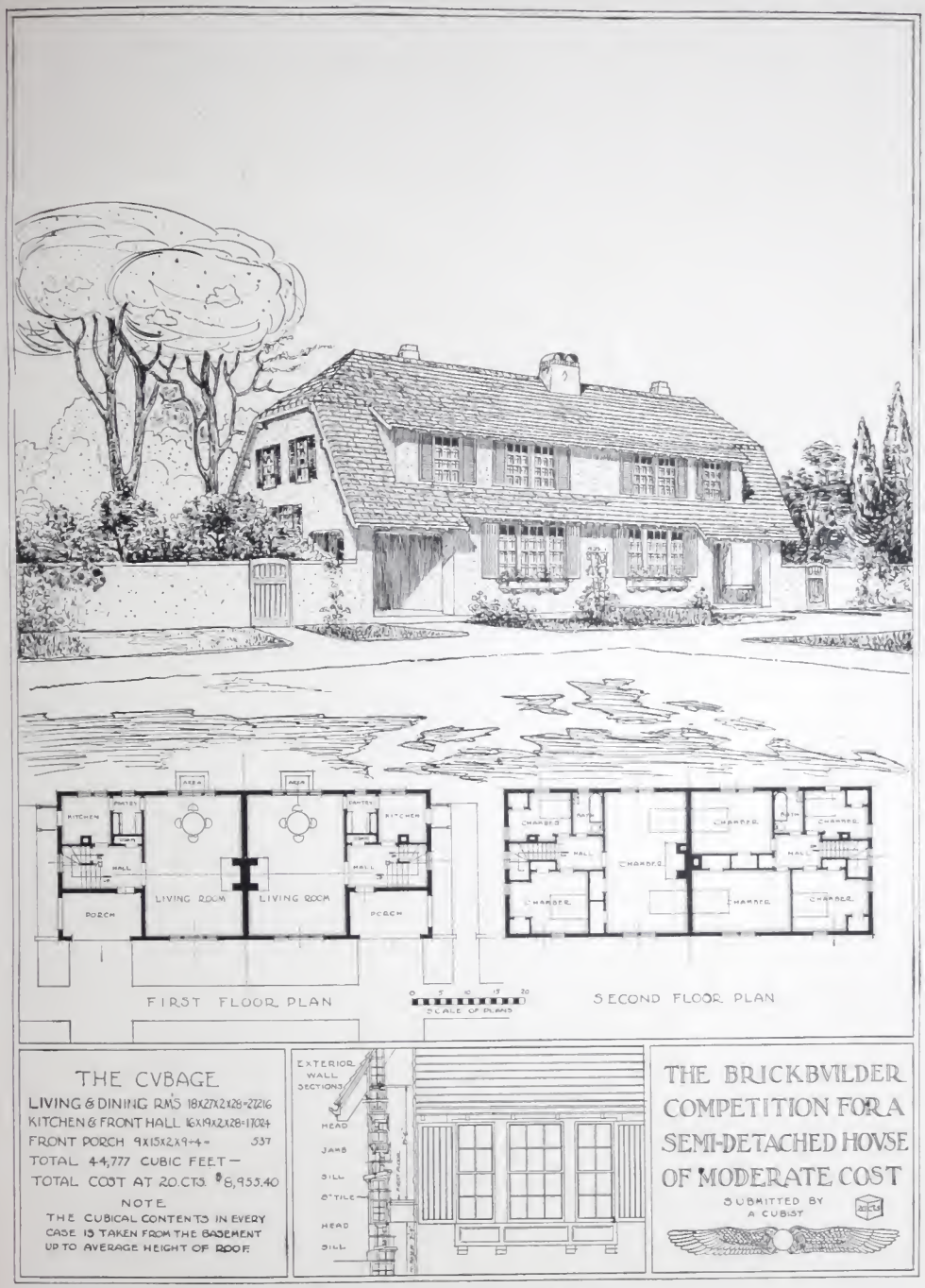


Design Submitted by Lewis Ross,
11 E. 24th Street, New York, N. Y.

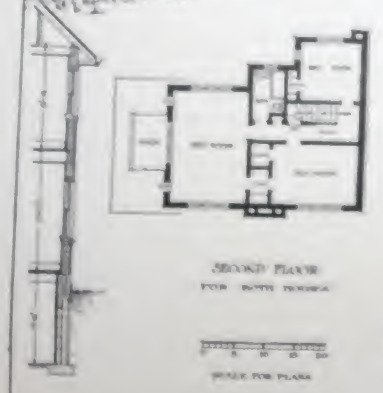
Design Submitted by W. Holmes Crosby,
450 South Chestnut Street, Clarksburg, W. Va.



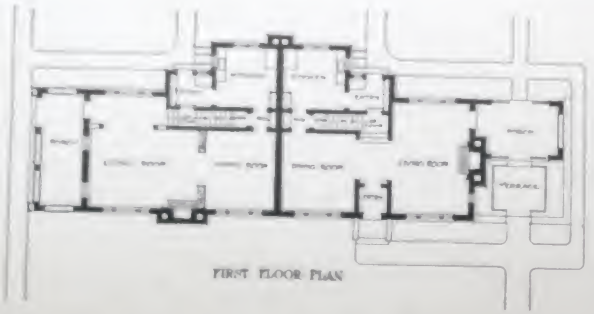
Design Submitted by John England, Jr.,
7401 Perryville Avenue, Ben Avon, Pa.



Design Submitted by Albert M. Kreider,
89 Franklin Street, Boston, Mass.



SECOND FLOOR



FIRST FLOOR PLAN

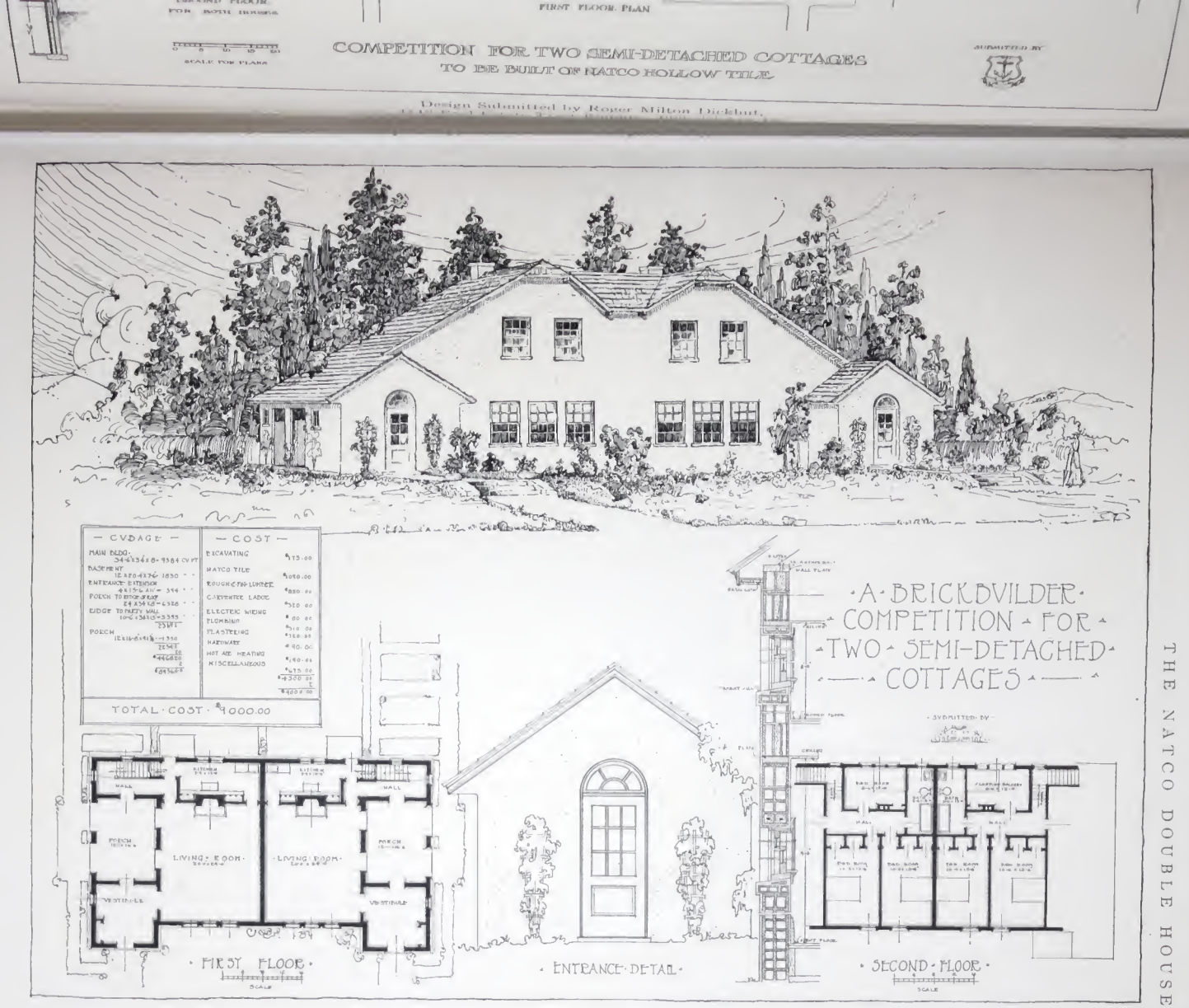
ESTIMATED COST		
CUBAGE	EXCAVATING	$ 140
FLOOR AREA	MASONRY	3600
— 1520	CARPENTRY	2325
HEIGHT — 29	PLASTERING	1025
44080	PLUMBING & HEAT	1120
PORCHES — 700	PAINTING & GLAZING	250
TOTAL CUBE 44780	LIGHT FIXTURES	320
COST PER — — 20¢	HARDWARE	90
$ 8956.00	TINNING	80
TOTAL COST	TOTAL	$ 8950

SCALE FOR PLANS

COMPETITION FOR TWO SEMI-DETACHED COTTAGES
TO BE BUILT OF NATCO HOLLOW TILE

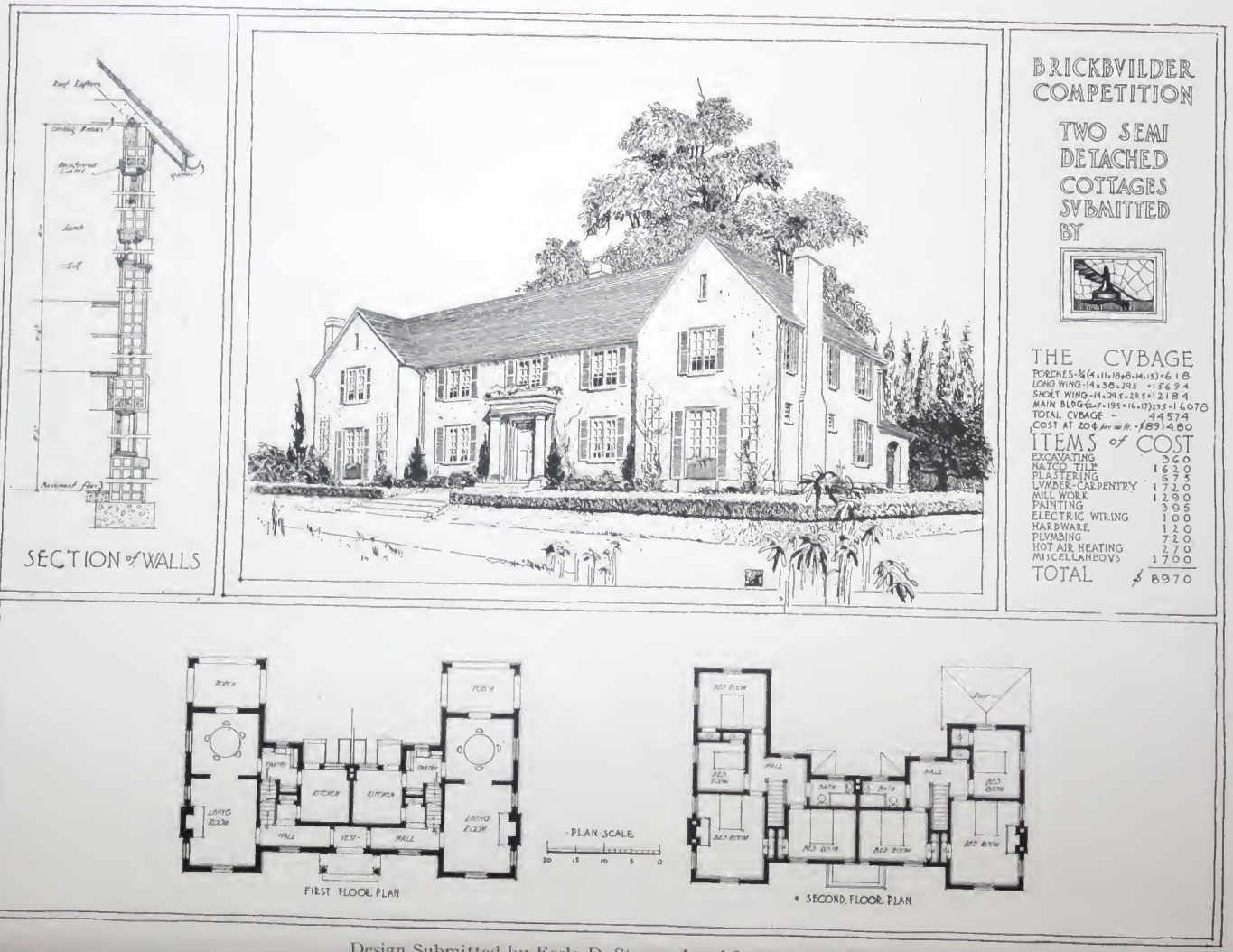
SUBMITTED BY

Design Submitted by Roger Milton Dickhut,
1718 Real Estate Trust Building, Philadelphia, Pa.

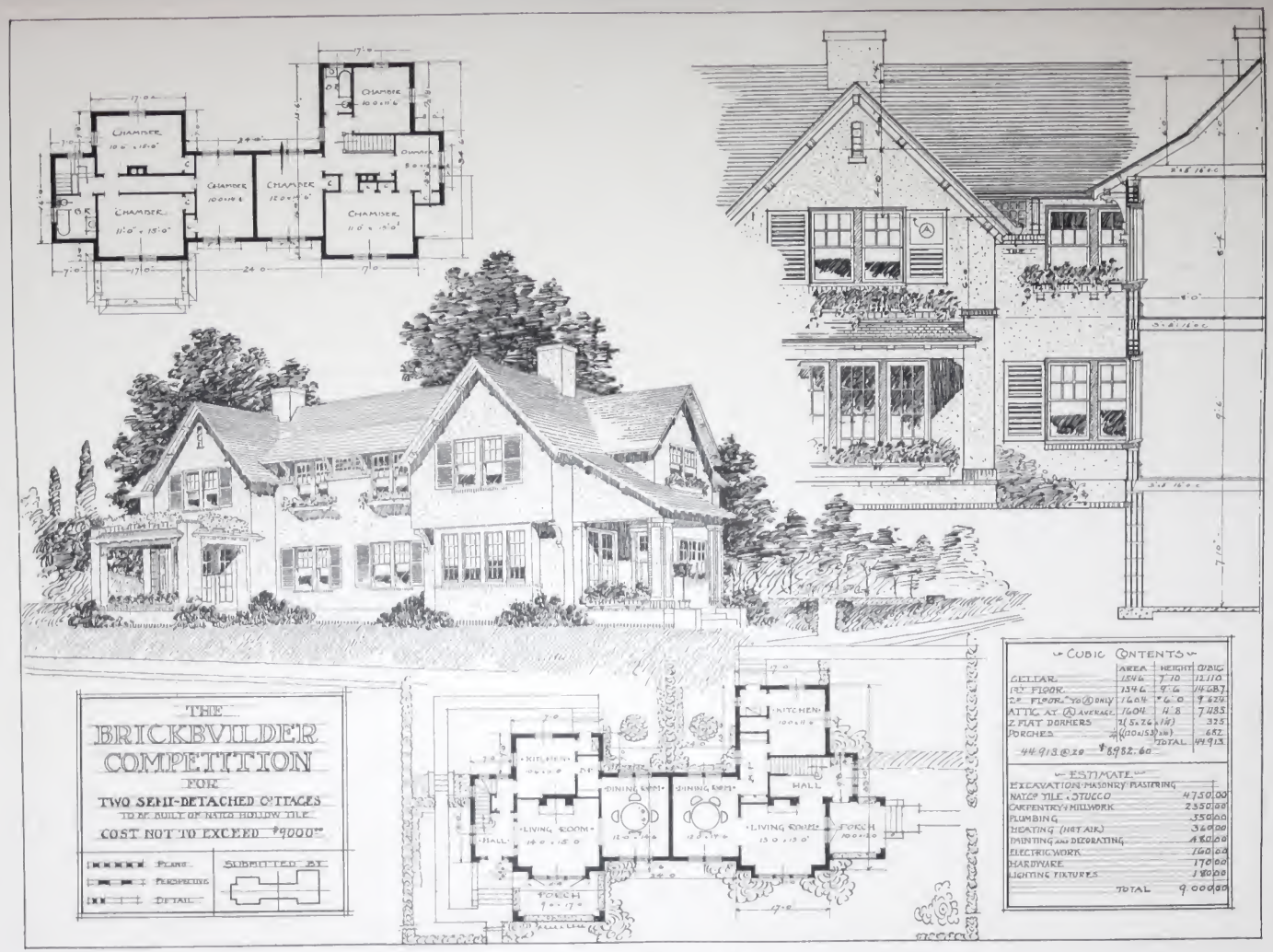


Design Submitted by Roger Milton Dicklut,

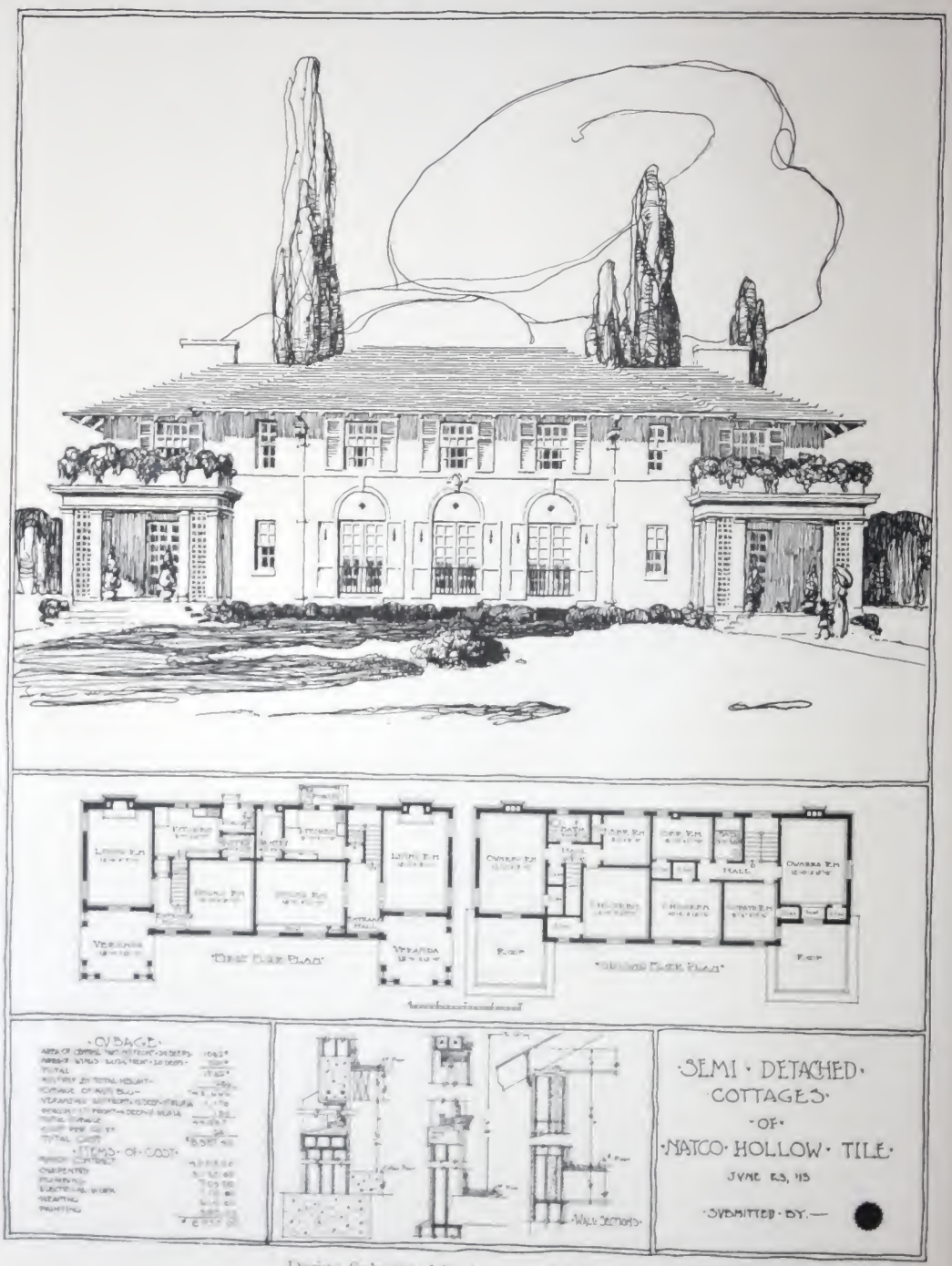
Design Submitted by Paul F. Jagow,
231 Ryerson Street, Brooklyn, N. Y.



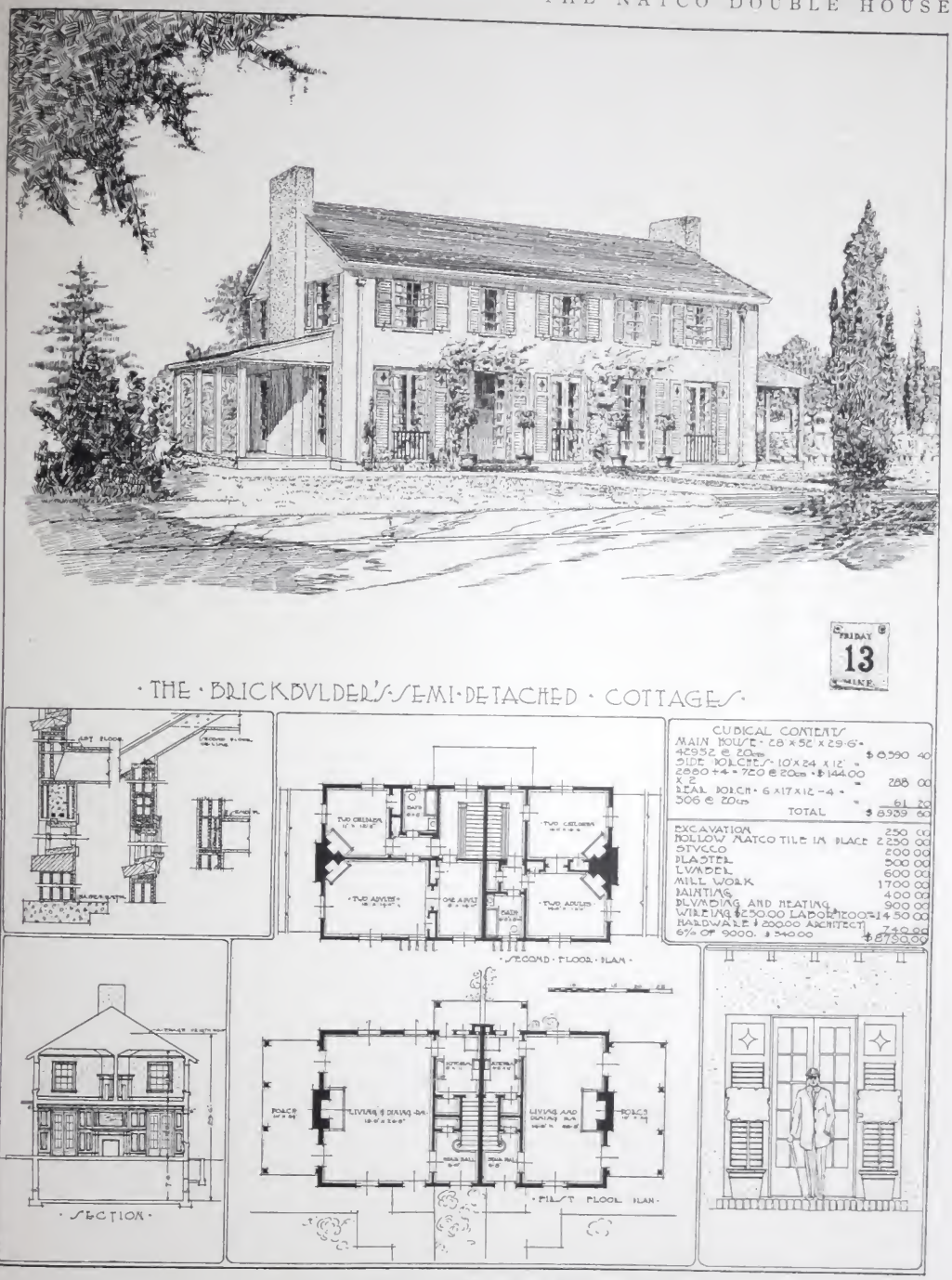
Design Submitted by Earle D. Stonerod and Lawrence L. Wolfe.



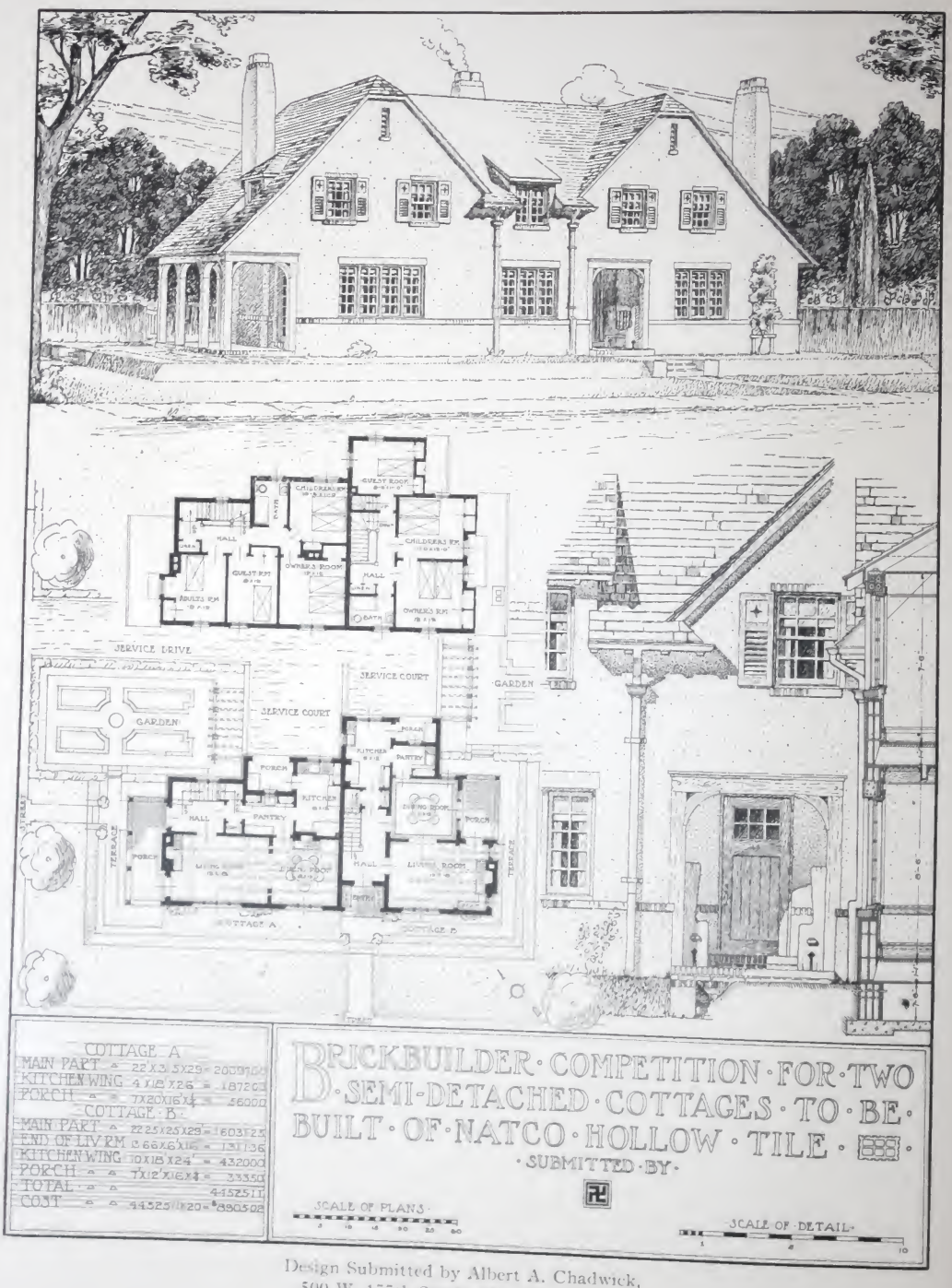
Design Submitted by George A. Sumner,
989 Southern Boulevard, New York, N. Y.



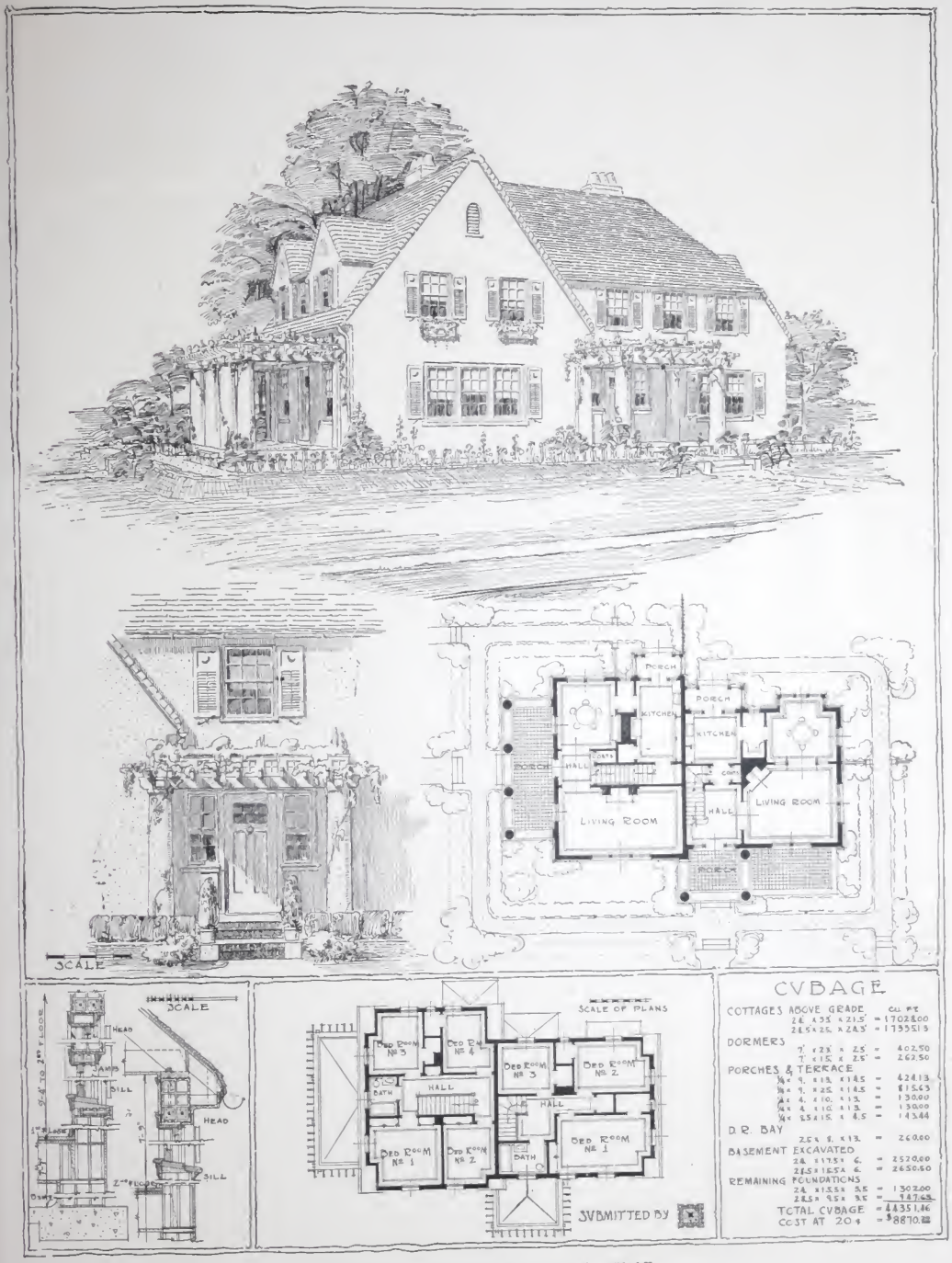
Design Submitted by Laurence M. Loeb,
37 East 28th Street, New York, N. Y.



Design Submitted by M. Luther Hampton,
1233 Washington Street, Columbia, S. C.



Design Submitted by Albert A. Chadwick,
500 W. 177th Street, New York, N. Y.

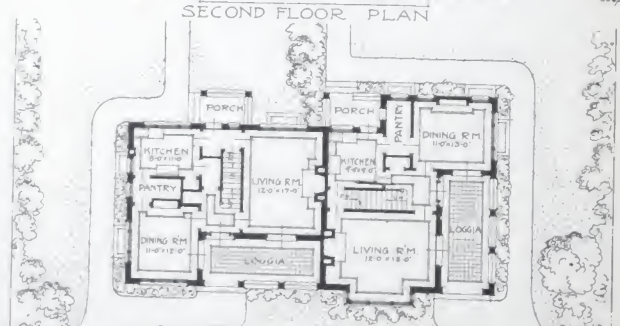


Design Submitted by Rudolph G. Wolff,
2119 North Clark Street, Chicago, Ill.

CUBIC CONTENTS

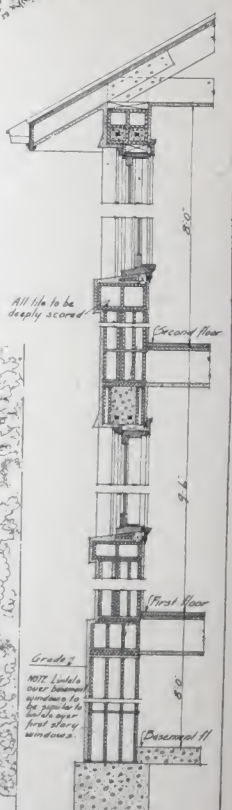
Basement (excavated portion)	9200 cub ft
First story	13393 " "
Second story	14128 " "
Roof	7064 " "
Porches etc (about)	1207 " "
Total	44992 cub ft
at $0.20 per cub ft	$8998.40

SECOND FLOOR PLAN

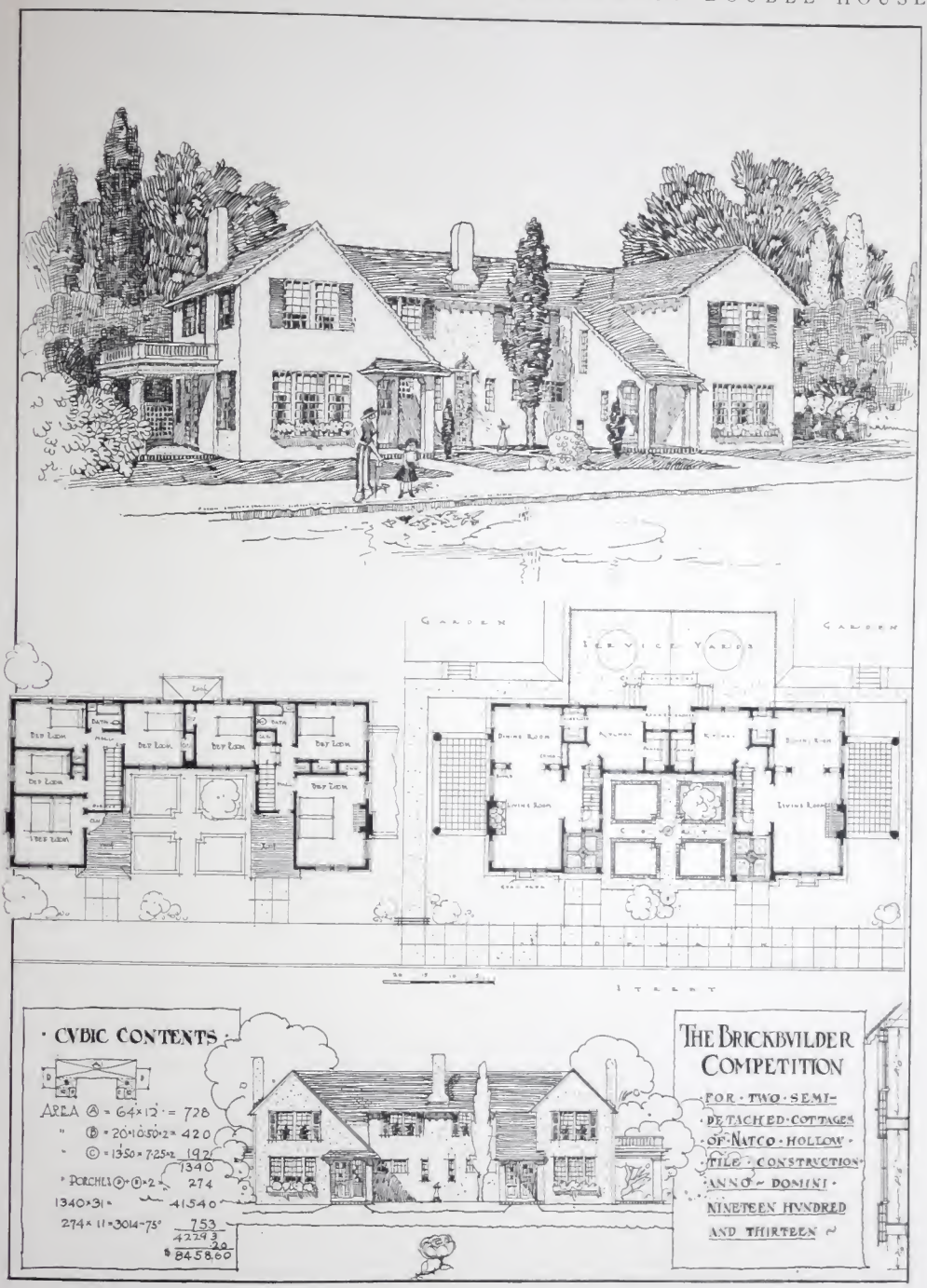


FIRST FLOOR PLAN

SUBMITTED BY

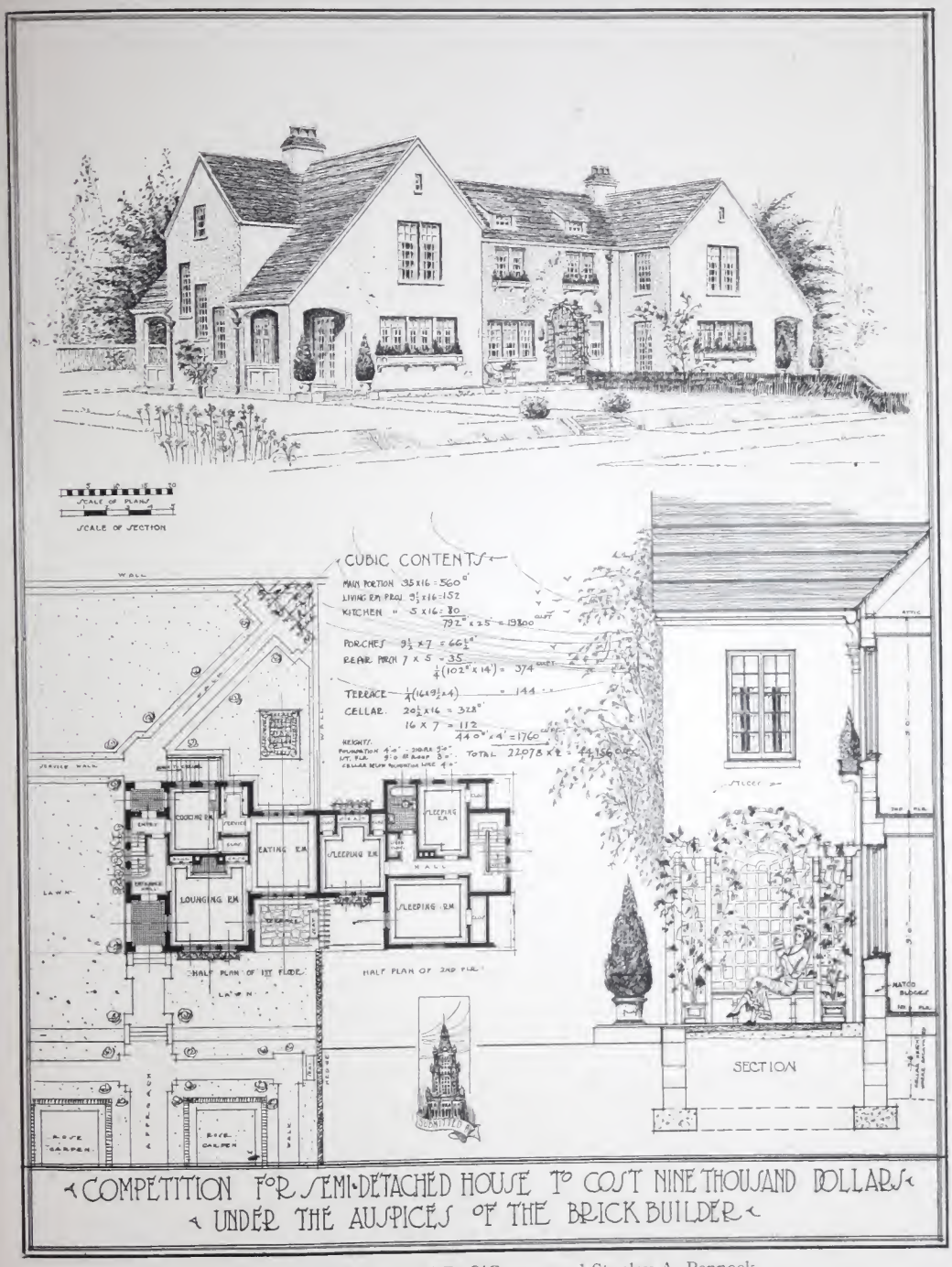


Design Submitted by Roy E. Pingrey,
1106 Rookery, Chicago, Ill.

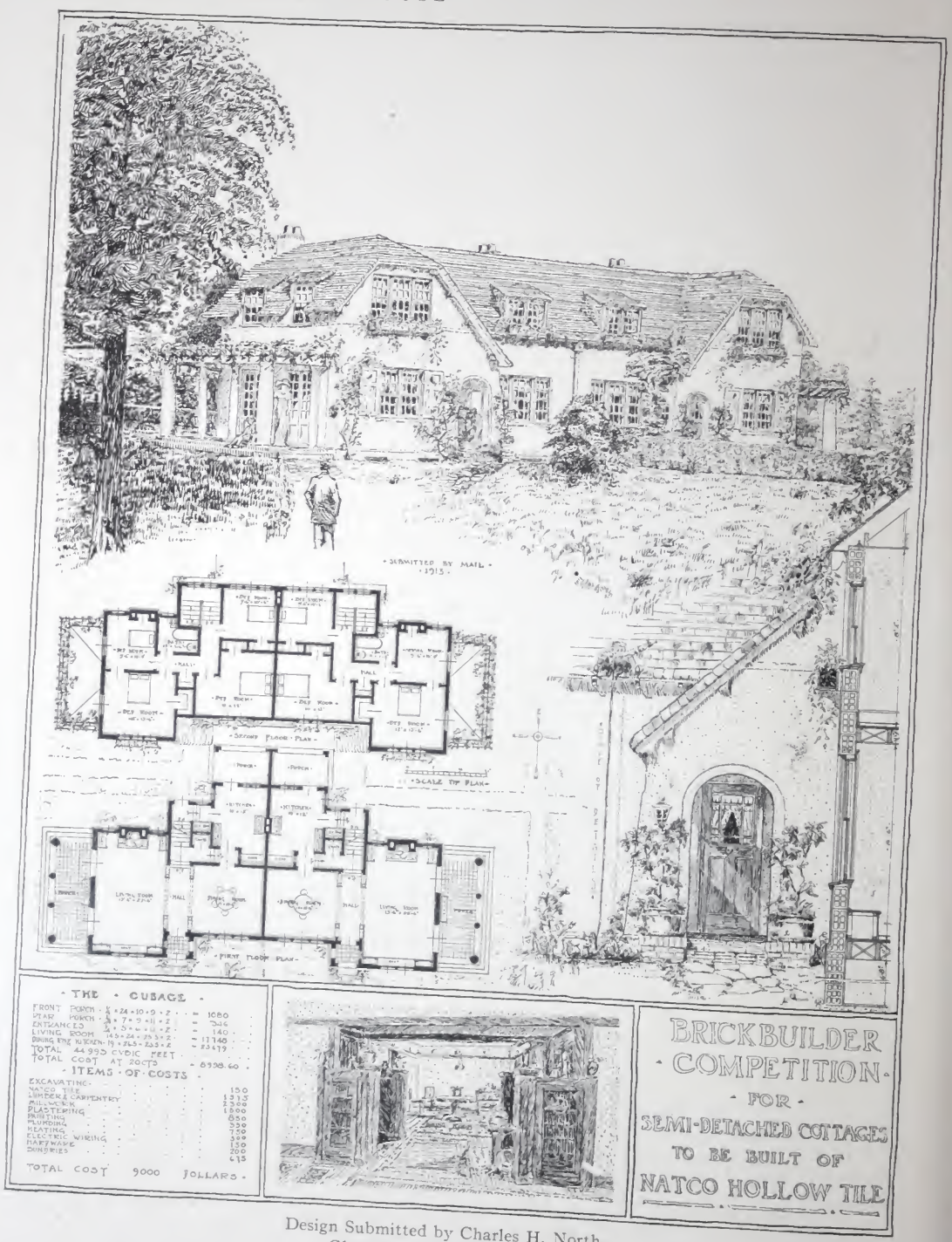


Design Submitted by Joseph McGinniss,
112 Water Street, Boston, Mass.

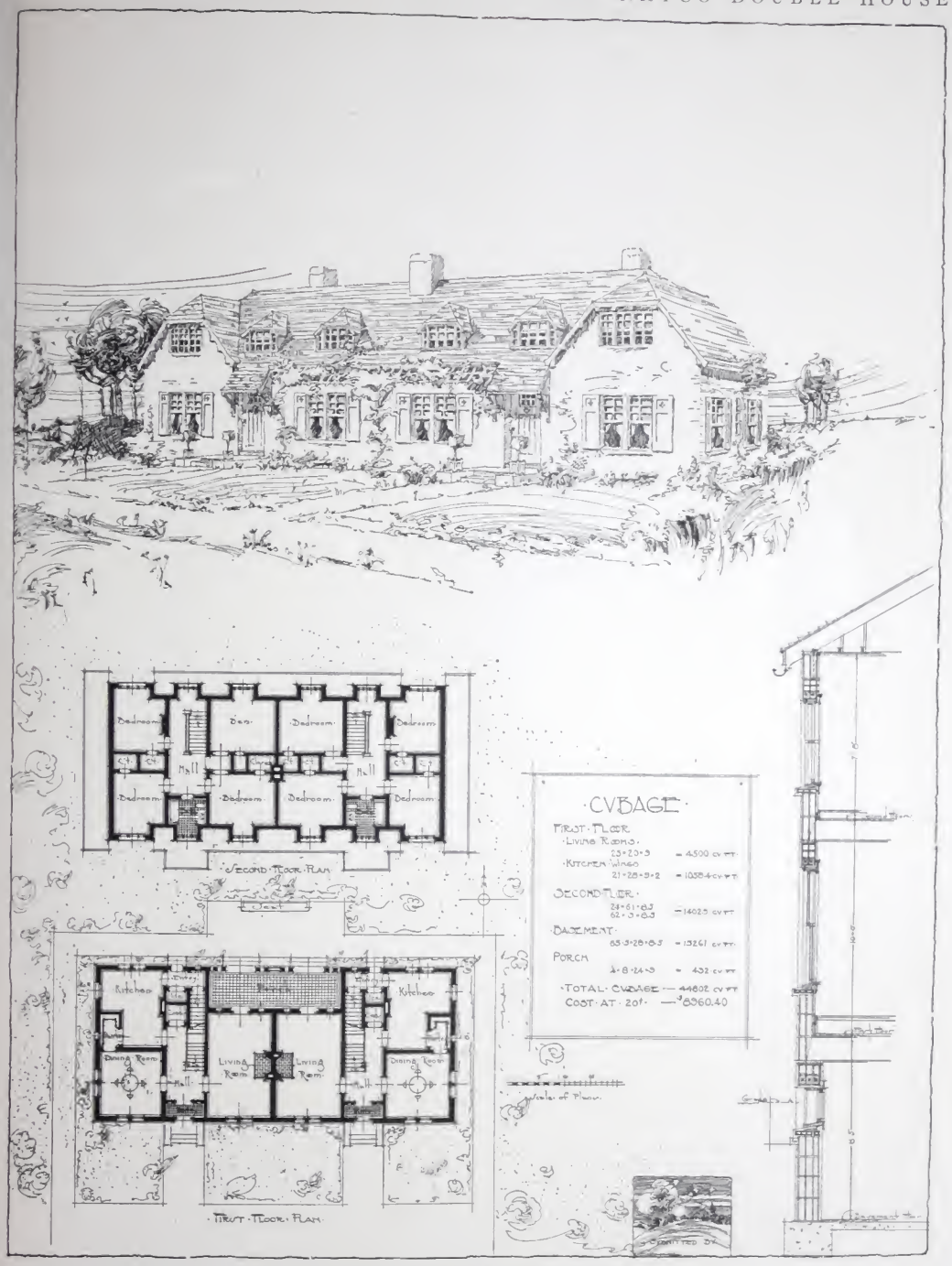
Design Submitted by Harry F. C. Mennecke,
412 East 15th Street, New York, N. Y.



Design Submitted by Fred B. O'Connor and Stanley A. Pennock,
State Architect's Office, Albany, N. Y.



Design Submitted by Charles H. North,
Glenolden, Del. Co., Pa.

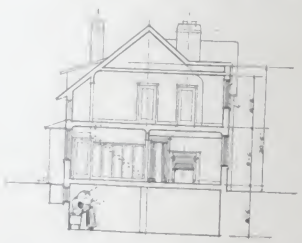


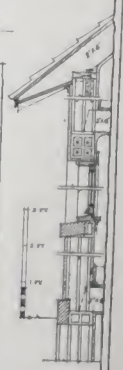
Design Submitted by F. Arnold Chandler,
67 Bristol Street, New Haven, Conn.

SUBMITTED BY

SECOND FLOOR PLAN

FIRST FLOOR PLAN





THE CUBAGE

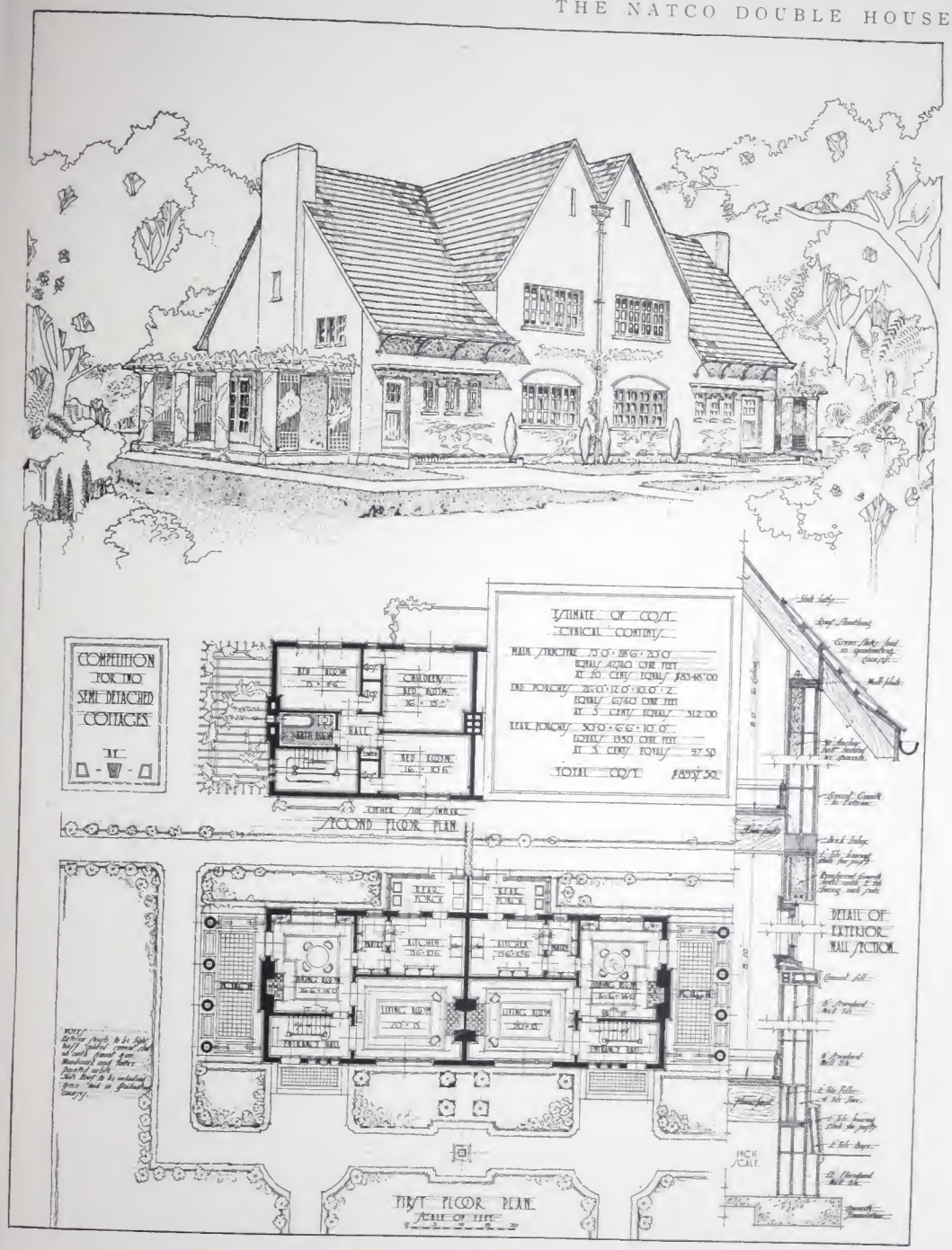
MAIN PORTION	27×30×28 = 37600
PORCHES	11×14×12×2×¼ = 924
KITCHEN WING	11×14×26 = 4302
PANTRY BAYS	7×3×10×2 = 420
TOTAL	43446 CUBIC FEET
COST AT 20 CENTS	$8689.20

ESTIMATE

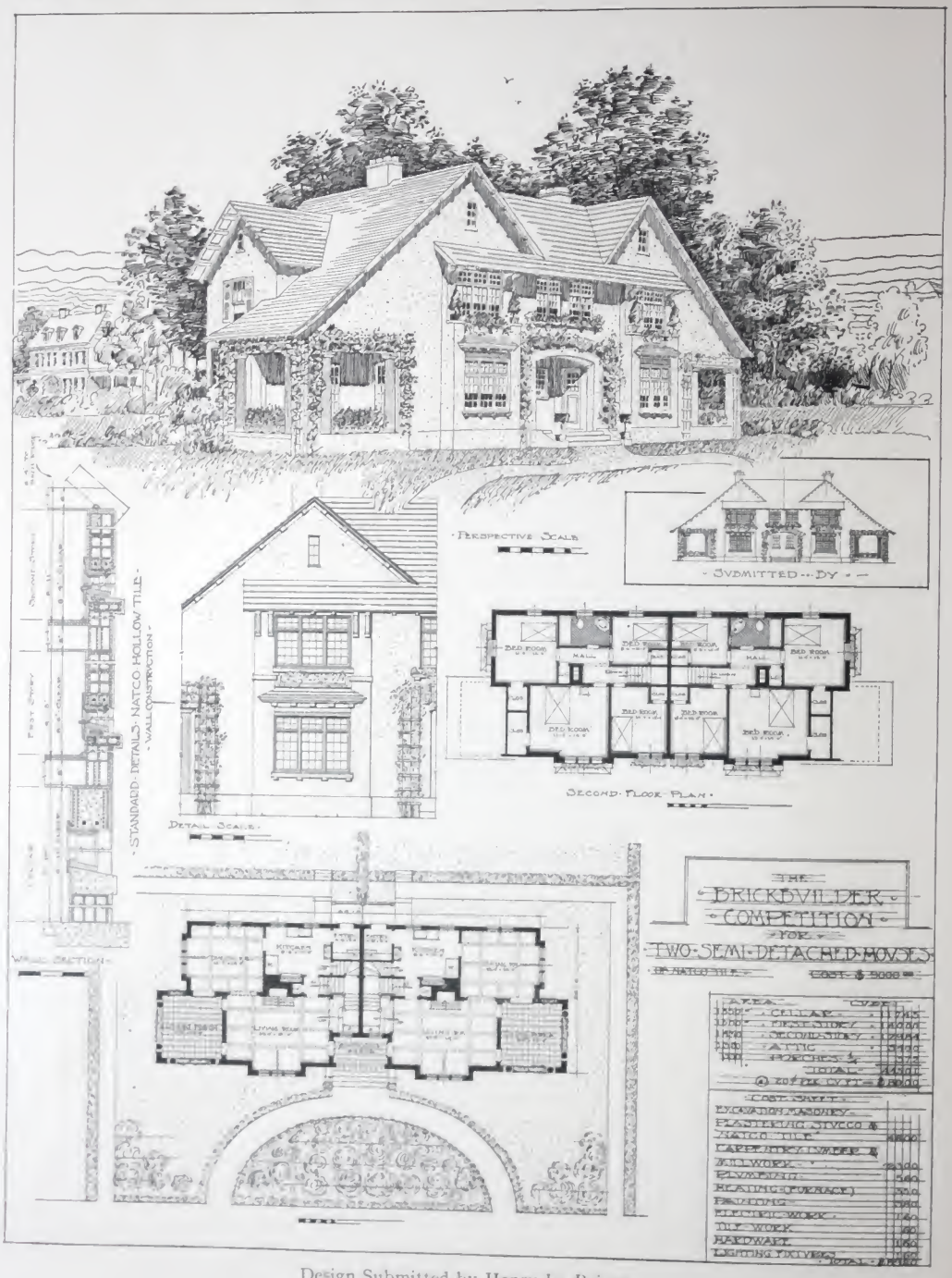
EXCAVATING	$ 150.
TILE WALLS	1500.
PLASTER & STUCCO	630.
CARPENTRY & MILLWORK	3000.
SHINGLING	165
PAINTING ETC	400.
WIRING & FIXTURES	300.
HARDWARE	350.
PLUMBING	600.
CONCRETE & GRANITOID	200.
HEATING	500.
CONTRACTOR	750
MISCELLANEOUS	119.

TWO SEMI-DETACHED COTTAGES OF NATCO TILE TO COST $9000.

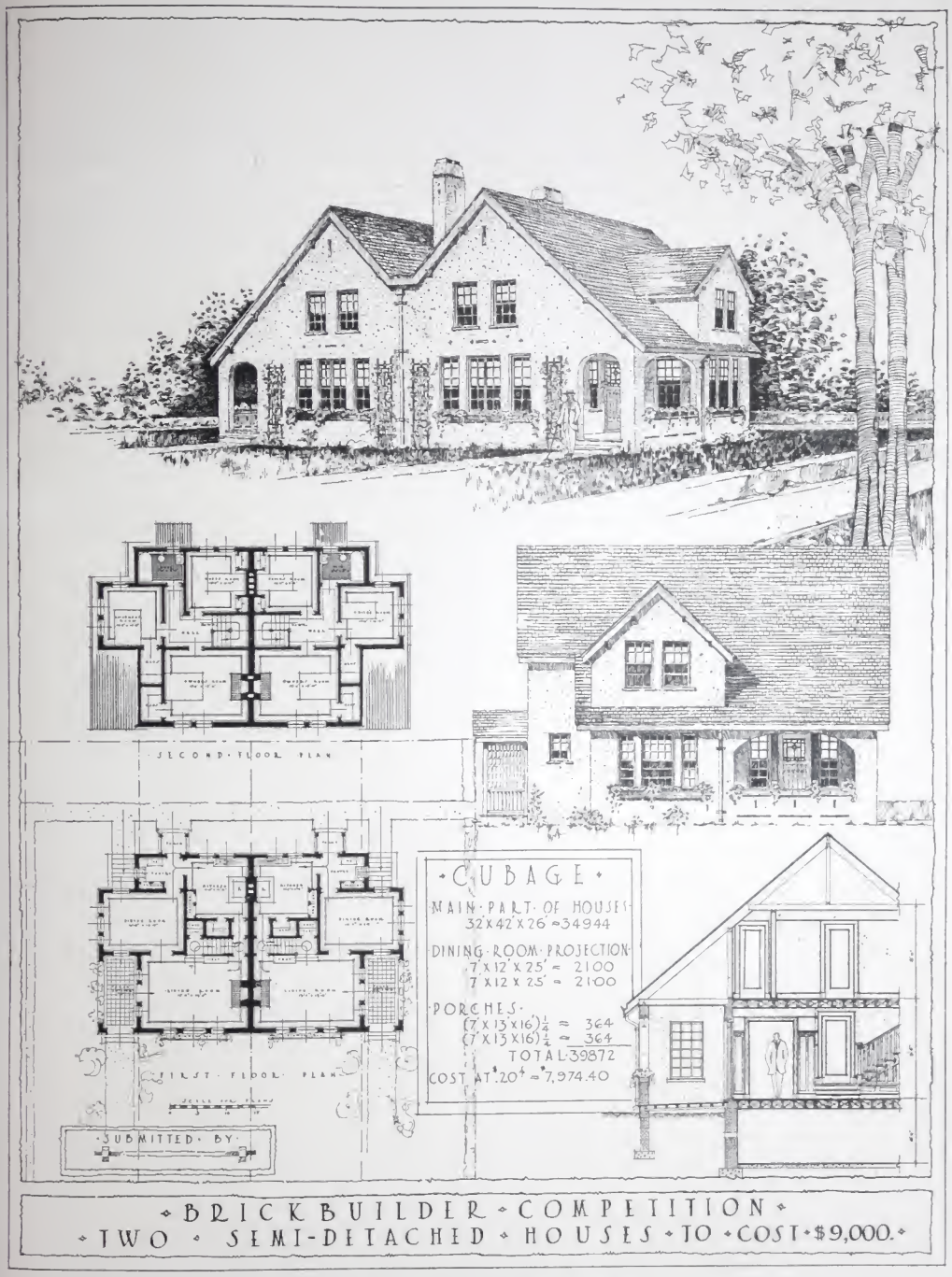
Design Submitted by E. L. Pleitsch,
408 Board of Education Building, St. Louis, Mo.



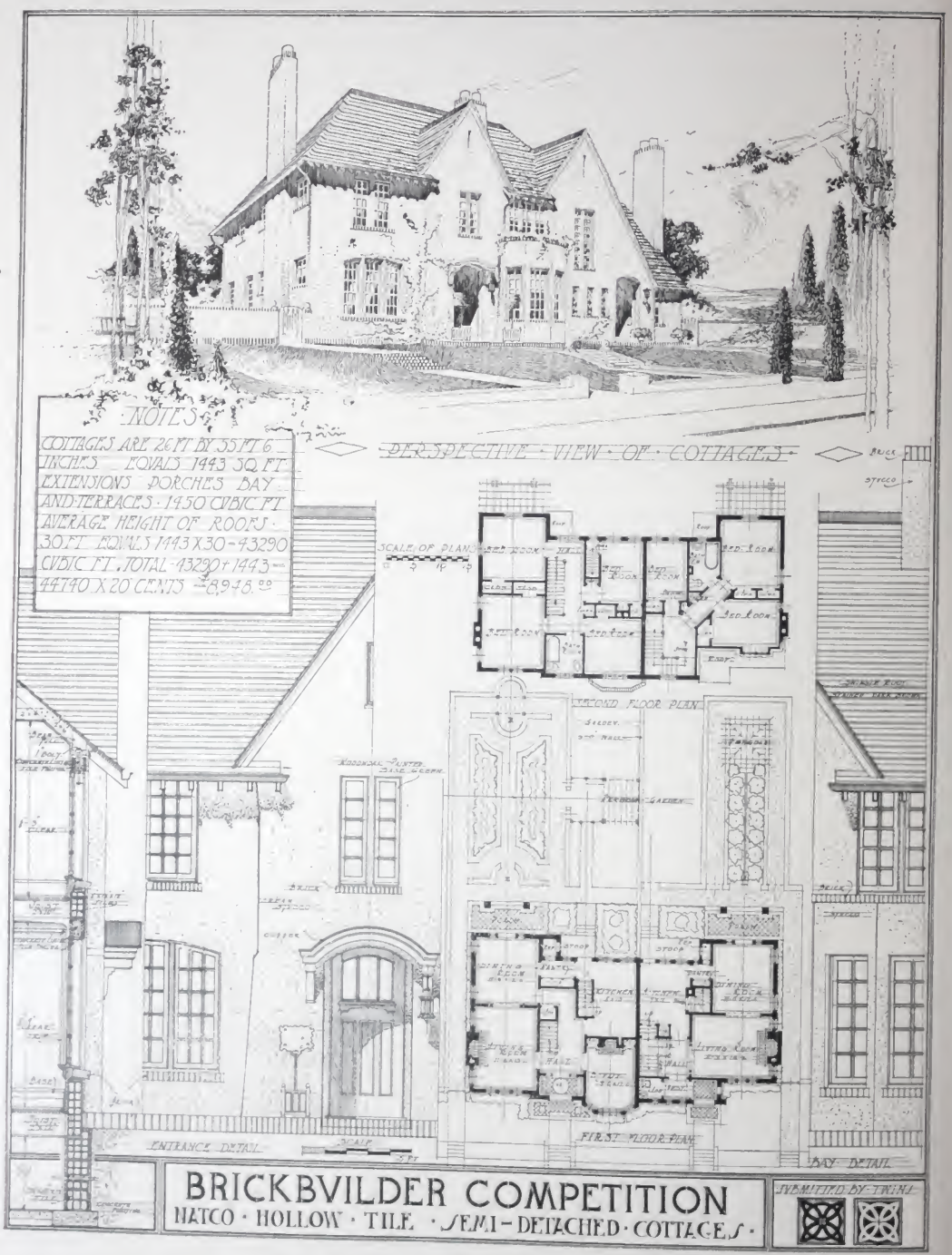
Design Submitted by A. R. Widdowson,
1406 "Pea" Street, Sacramento, Cal.



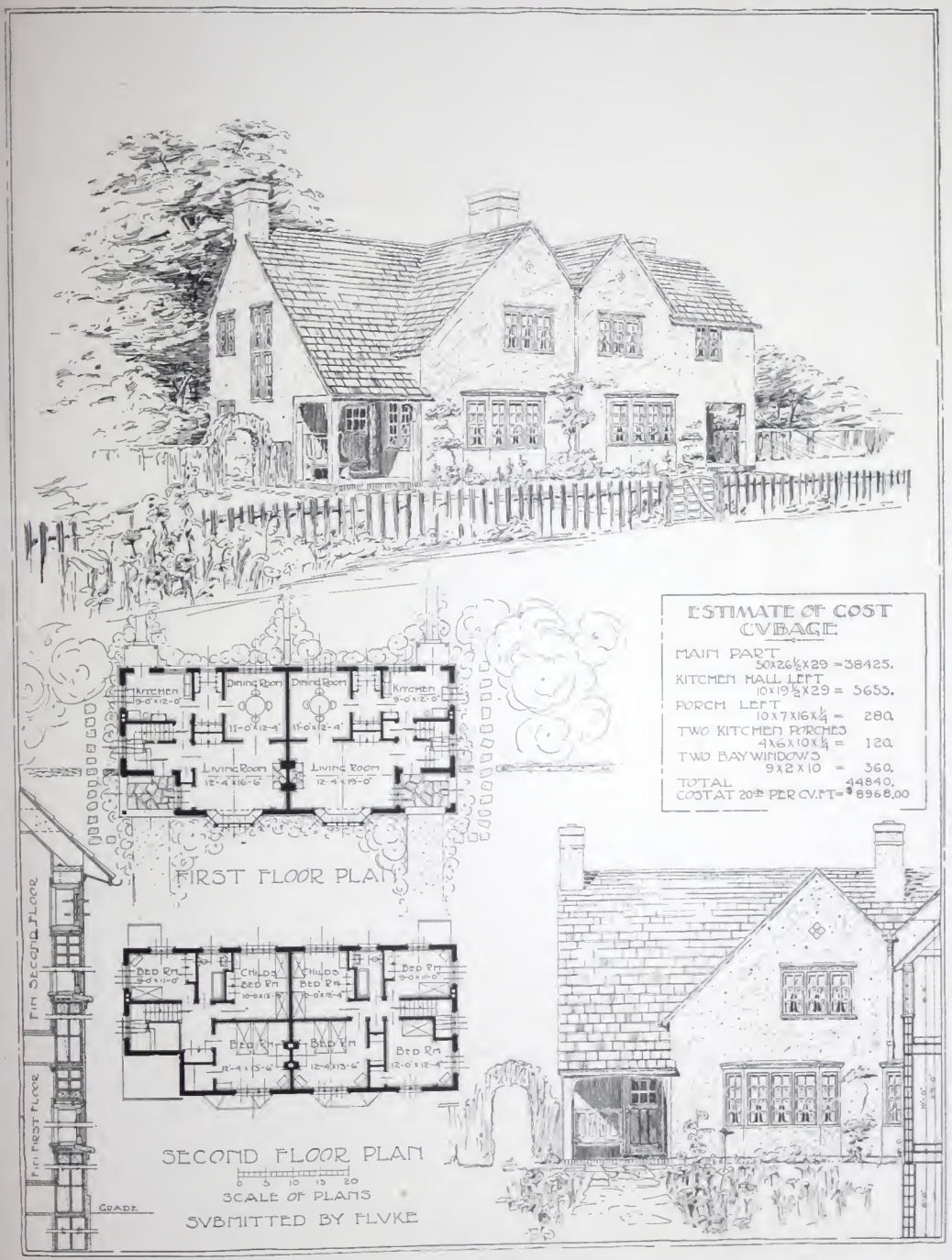
Design Submitted by Henry La Pointe,
989 Southern Boulevard, New York, N. Y.



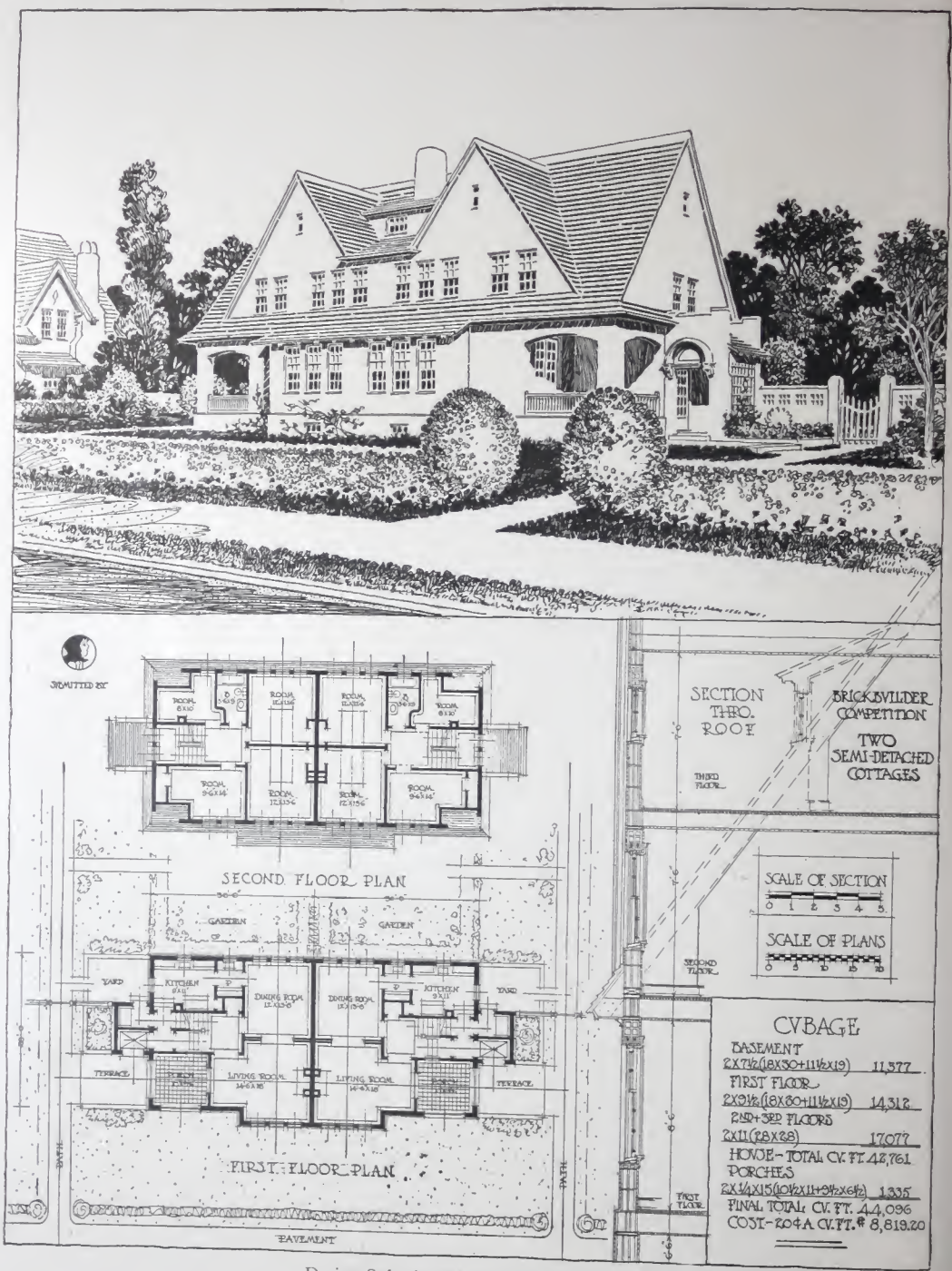
Design Submitted by George A. Speers,
84 Fourth Avenue, New York, N. Y.



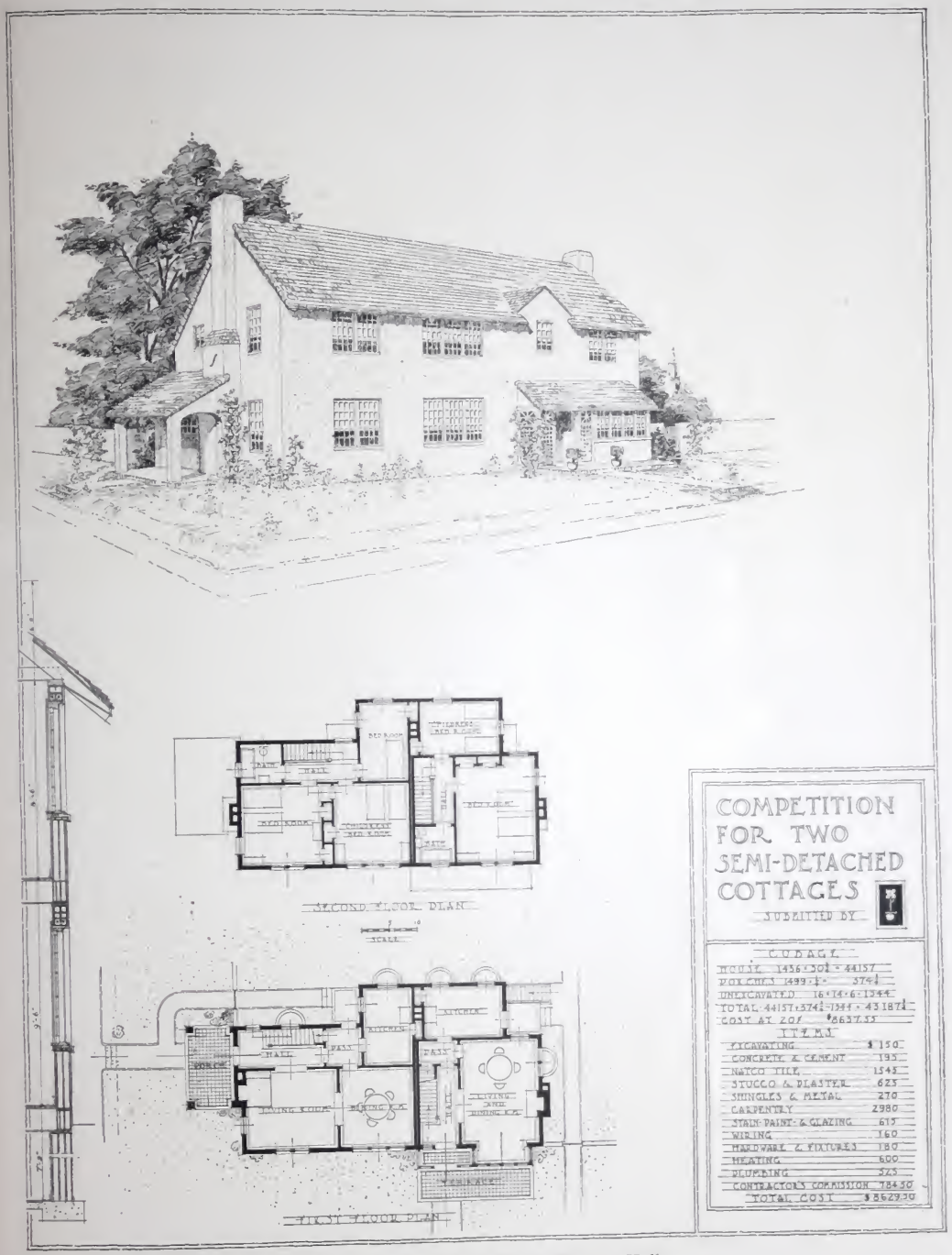
Design Submitted by Norman Walton Alpaugh,
4222 Halldale Avenue, Los Angeles, Cal.



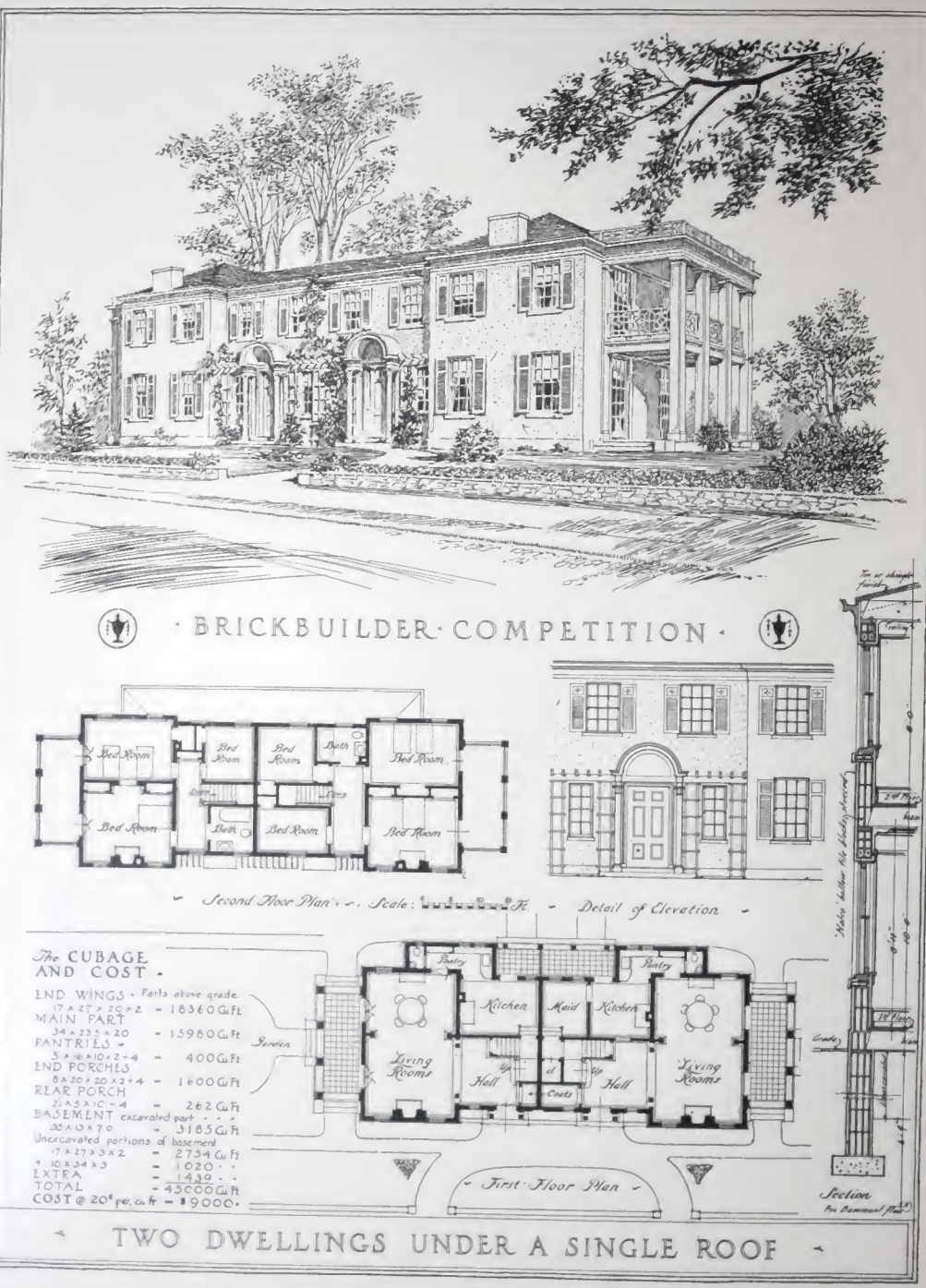
Design Submitted by E. Phillip Varian,
464 Gas & Electric Building, Denver, Colo.



Design Submitted by David A. Clous,
1123 Broadway, New York, N. Y.



Design Submitted by Henry William Hall,
408 Board of Education Building, St. Louis, Mo.



Design Submitted by Wilhelm Berg,
336 Undercliff Avenue, Edgewater, N. J.

Competition for Two Semi-Detached Cottages To be Built of Natco Hollow Tile

The Program Governing the Competition

THE problem calls for Two Small Semi-Detached Cottages—two dwellings under a single roof, separated by a party wall—the walls and foundations of which are to be built of Natco Hollow Tile. Competitors may group the two cottages in any manner they see fit—originality in this respect is sought after.

The location may be assumed in a town, small city, or suburb of a large city. Size and shape of plot to be established arbitrarily by the designer—the land is level.

Each cottage may have two or three floors—above foundation.

One cottage is to provide living accommodations for a family of two adults and two children, and the other, accommodations for a family of three adults and two children.

The cost of these two semi-detached cottages—exclusive of the land—shall not exceed $9,000. The method of heating and plumbing, other fixtures and finish, to be governed by the limit of cost.

The cost of these cottages must be figured at $.20 per cubic foot. Measurements of the cottages must be taken from the outside face of exterior walls and from the level of basement floor to the average height of all roofs. Porches, verandas, and other additions are to be figured separately at one-fourth (25%) of their total cubage. The cost of porches, etc., is to be included in the total cost of the two cottages ($9,000).

All cubage and other dimensions will be carefully checked before the drawings are submitted to the jury.

The jury will not consider those designs which exceed the limit of cost.

The jury will give first consideration to the fitness of the design, in an aesthetic sense, to the material employed; second—the adaptability of the design, as shown by the details, to the practical constructive requirements of the material; third—excellence of plans.

Drawings which do not meet the requirements of the program will not be considered.

On the drawing in a space measuring 6 inches by 5 inches—enclosed in rules—is to be given, at a size which will permit of three-quarters reduction, the cubage of the cottages multiplied by the cost per cubic foot, and the various items with costs which go to make up the total cost of the cottages.

Report of the Jury of Award

THE problem of a small two-family house is one which has been so often treated as to render anything new extremely difficult of attainment. Moreover, the necessity of basing these particular designs upon the use of stuccoed surfaces of largely uniform character had a tendency to restrict the designs to three general types, namely, the Old Colonial, the English country house, and the Spanish. Under these circumstances the variety of solutions

submitted and the general high order of merit was a matter of both surprise and satisfaction to the jury. The results of this competition are an excellent indication of the general advance in design and composition to which the younger generation of American architects are so largely contributing, and, in particular, testify to a very high average of good taste and a strong feeling for simplicity. These facts rendered the duty of selecting the ten best designs one of particular difficulty, as many of the drawings submitted were of almost equal excellence with those premiated.

First Prize: Was awarded for exceptional imagination and originality in the use of the material, this being the primary requisite upon which the judgment was based, according to the terms of the program. This drawing also showed a command of composition and grouping which extended even to the arrangement of the accessories in connection with the rendering, which is particularly to be commended.

In plan, this project is less practical than some of the others. In particular, the rooms marked "Den" are too small to be used for this purpose and might better have been denominated "Coat Rooms," as their real use seems to have been dependent upon the requirements of the exterior effect. On the other hand, this plan shows staircases with square landings, a feature largely neglected in many of the other plans, where winders were the rule. Certain other features, such as the recessing of a space for the kitchen stove, are also to be commended.

Second Prize: Was awarded to a scheme less interesting in design than the one already mentioned, but showing more careful study in the arrangement of the plan and better knowledge of livable conditions. In particular the grouping of the service in such a way as to be convenient to the street and as not to interfere with the use of the garden, is a point of particular value. This arrangement concentrates the plumbing while keeping the main entrance entirely separate and in direct communication with the garden at the rear. It also carries out the intentions of the program with reference to bedroom facilities. There is no doubt that this would give greater practical satisfaction to an owner than the first prize, although doing less for the advancement of architectural design. The exterior is, however, better than it appears, as its effect is marred by the rendering.

Third Prize: Was given to a simple and attractive design. It would be improved in plan by dividing the living room from the dining room, and as the cubage was well within the requirements, both living and dining rooms, together with the bedrooms above, might have been enlarged to advantage. While this design is well adapted to the use of tile, the actual detail of the construction was poorly indicated and showed a lack of knowledge of the material to be employed. The perpendicularity of the two center windows is also disagreeable, but there is a nice feeling in the detail of the door.

Fourth Prize: Was awarded to a design which, although simple and well considered, was somewhat lacking in originality. In plan the entrance halls are narrow and unsatisfactory, owing to the service arrangement which necessitated a closing off of the staircase. This drawing is commended for good general composition and excellent presentation.

The six drawings following the prizes have been given equally honorable mention and the order in which they are discussed bears no relation to their respective merits.

The mention drawing shown on page 10, shows a simple and attractive exterior with a distinctly homelike charm. It is also very agreeably presented and in particular the free-hand rendering of the plan eliminates much of the stiffness which characterizes the presentation of other drawings.

The mention drawing shown on page 9, shows a good livable plan with proper separation of service yard from garden. Certain practical points are, however, forgotten. In particular, no kitchen chimney is shown and this design would, therefore, be unsatisfactory in parts of the country where the gas stove and fireless cooker are not in general use.

The mention drawing shown on page 13 while attractive is to be criticized for the treatment of the tops of the walls of the bay windows, which in actual construction would result in staining and disintegrating the stucco surface. The difference in the two doorways is out of keeping with the otherwise symmetrical treatment of the elevation. The bay windows also appear to be incorrectly shown in perspective, as they give the effect of rectangular projections which, in point of fact, would have been much better than the sloping bays shown in plan.

The mention drawing shown on page 14 shows a simple, straightforward plan, but commonplace and lacking in originality of design. The presentation is also unfortunately complicated.

The mention drawing shown on page 11 is interesting in general character, but has the disadvantage in plan that it is necessary to pass through either the dining room or living room in order to go from the kitchen to the front door.

The mention drawing shown on page 12 is simple in plan and beautiful in rendering, but the exterior would be hard and uninteresting in actual execution.

FRANK CHOUTEAU BROWN, Boston,
ABRAM GARFIELD, Cleveland,
WILLIAM H. SCHUCHARDT, Milwaukee,
HUGH TALLANT, New York,
WADDY B. WOOD, Washington,
Jury of Award.

Natco Tile—Its Development in House Building

By Frank Chouteau Brown

THE modern development of the terra cotta building tile with particular reference to its convenient use for dwellings has directly resulted from a demand representing a changed point-of-view on the part of the public in regard to the problem of house construction of so revolutionary a character that it is difficult as yet fully to comprehend its possible future influence upon American architecture. In order to realize this, one has but to recall the comparatively few new building materials that have been produced in the history of the world. Stone and wood are natural products that have always been employed. Concrete is nearly as old as we have any record of civilization. Brick we find specifically referred to in the very earliest legends of the habitation of the world. Wood is obviously the cheapest, the most readily adaptable and at the same time the most perishable of all. It is true that terra cotta represents merely a new use of the same earth-product that, in the form of brick, has continued to be employed from ancient times down to the present day. The hollow clay tile was, in the first instance, developed as a light weight insulation and fire protection for the iron frame of the modern office building—itself a revolutionary type of construction, the inception of which remains within the easy memory of a comparatively young man.

Despite the slight step necessary to extend the use of terra cotta floor and partition tile (familiar in office buildings) to the external walls of the dwelling, some time passed before this experiment was ventured. Once the way had been pointed, however, the idea spread with great rapidity. The obvious economy of the terra cotta tile over its near-relation, brick, occurs in two ways; the saving in labor occasioned by using one tile of terra cotta a foot square in place of fifteen or more bricks; along with an incidental saving in the expense of labor required to handle this larger unit of material. Any saving in the actual amount of clay material consumed is important only as it results in an accompanying—and sometimes desirable—lack of weight. When it follows that this economy of material and lack of weight is occasioned by the one, or more, dead air spaces that are inherent parts of the constructive tile some reasons for the popularity of this material, when adapted to its new purpose of dwelling construction, become clearly evident.

It also happened that the possible application of terra cotta to this purpose became apparent at exactly the same time as the building public began to realize the essential importance and desirability of arriving at an inexpensive and commercially possible type of fire proof house. The realization of this fact was partially brought about by the increasing cost of wood; the scarcity of the material and the poorer grades available in the market—which helped to emphasize the advantages of permanency in construction when easily obtainable at but slight advance in cost. The house of Natco tile being by many considered the best available form of modern fire proof construction it naturally followed that it began to receive much of the consideration that might otherwise have been directed towards the cement dwelling. As terra cotta tile comes now more and more to be used in dwelling construction there is evident a tendency to improve details of its construction, tending more thoroughly to insulate and better bond the walls; to provide shapes to take care of corners, door and window openings and floor joists, and lessen labor and trouble on the work—and otherwise variously to improve the technical means of its employment and reduce the cost to the owner.

Fundamentally, the influence exerted by the fire proof house upon design is manifest in the grouping of windows. If three are required in one wall of a room they would come together in one bank,—to save the labor of laying out, preparing for, and constructing, three separate openings in the masonry, where one opening can be made to serve the same purpose. This results in a distinctive character of exterior treatment capable, of course, of an infinite number of variations in architectural handling. Then the necessity of keeping the wall heights of the building low, both by reducing the height of the story to its minimum and by carrying the roof eaves down as low as possible, saves material in wall construction as well as the labor and handling required to raise the tiles to any great height above the ground. The use of terra cotta tends to make the rooms generally square or rectangular, without bays or expensive and unnecessary jogs or breaks in the continuity of their wall lines.

Up to this point we have merely considered the use of Natco Tiles in the upright wall construction of the dwelling. The fire proof house obviously requires a fire proof floor as well as a fire-resisting wall. In this particular, terra cotta tile is especially available for inexpensive employment—merely by laying the ordinary tile down in rows four or five inches apart, placing a bent iron rod in the open spaces and pouring them full of concrete. The result is a construction that consists substantially of reinforced concrete beams; separated by the rows of tile, which fill the voids and stiffen these beams

against any side deflection. At the same time they save the expense of "forms" for pouring, and provide a surfacing fitted to receive the floor above and the ceiling beneath; thus saving further labor and expense. To give these floors their simplest and most inexpensive upper finish would mean a surface of concrete, to which as yet we in this country are not accustomed, although it is commonly used in both large and small houses in England and on the continent. The concrete floor can be treated in color, and otherwise, so as to maintain a smooth surface requiring little care in maintenance, or in housekeeping. Rugs can be used the same as upon a wooden surface and its actual cost of construction so little exceeds that of the ordinary wooden floor joists with furred and plastered ceiling and oak upper surface that, in the small house, it need hardly be taken into consideration. To the American housekeeper, however, the result of this fire proof treatment is so simple and plain, so obviously sanitary and cleanly, that its first effect is one of bareness—merely because of the elimination of the unnecessary wooden finish and detail to which one is now accustomed. Advantages of saving in up-keep, and in housekeeping labor are, nevertheless, so considerable that it seems probable that these objections will not much longer supervene to prevent the rapid development of this particular type of treatment in the small as well as in the large American dwelling. It is even probable that the advantages, permanency and fire resisting qualities, in connection with the slight additional expense that is even now required to construct a dwelling in this way, may soon result in our accepting the practical advantages and investment economies of building after this fashion,—even before the extension of the fire limits in our American cities to include the suburbs will impose such a treatment as a necessity!

The most suitable and least expensive roof for a fire proof Natco Tile dwelling would be flat, in the oriental fashion; but this is also a form to which we are not accustomed, besides, it does gather snow in winter, and heat in summer. A pitched roof is more expensive in tile construction than circumstances as yet generally seem to warrant. A satisfactory substitute, however, can easily and cheaply be obtained by using slate supported on wooden rafters which will sufficiently resist fire brought from without by means of brands or other flying ignited substances, while if the attic floor of the house is of fire proof construction, any possible danger from fire within the building is reduced to a point where it practically does not need to be taken into account by either owner or occupant of such a dwelling.

The economic value of tile for dwelling construction purposes lies wholly in the fact that it is the natural material to supplant the unsatisfactory, perishable and easily inflammable wooden dwelling,

the cost of which increases year after year with a deadly regularity, that will inevitably cause it soon to equal, if it does not even surpass, the cost of the house built of terra cotta tile, which can easily and profitably continue to be manufactured and sold at present prices.

The slapdash or stucco finish, accepted as an attractive exterior treatment for the house several years before the terra cotta tile was considered for purposes of wall construction, is especially adapted to be used for an outer surfacing over the tiles, which provides a better and more permanent base than was before available for this type of dwelling. In earlier days, when stucco was applied on wire lath over a wooden wall, cracks were occasioned by the shrinkage of the house frame. When stucco is applied on the terra cotta tile, it is entirely free from these objections, while the elimination of furring and wire lath makes possible a slight saving in the cost of its application.

Natco hollow tiles may be left with their outer surface exposed; the material is susceptible of interesting architectural treatments in ways that have as yet been little ventured in America. The writer has erected a small cottage near Salem, Mass., where a hard-burned terra cotta tile, employed in this way and plastered directly on the inside, has resulted in an attractive and successful dwelling; the material itself suggesting an unusual and characteristic color treatment for the building. In a summer camp near Buzzards Bay, hollow tile has been similarly used, leaving the tile exposed within the rooms as well as on the exterior of the building with a result that is cool and attractive, unusual and cleanly. When hollow tile walls are plastered inside directly upon the tile, unnecessary and expensive wooden finish around doors and windows may be omitted, leaving a smooth plastered corner angle; saving much cost of painting and up-keep, and doing away with the unsightly shrinkage at wooden joints which becomes so apparent after a house has been occupied for one or two years. Terra cotta is further available for the cellar walls of the small house and is less expensive than stone or concrete.

With all these advantages in favor of hollow tile construction it can readily be seen that it only remains for the cheaper materials and forms of construction to advance within the next few years—as they surely will—to the point where they will still more nearly equal the cost of the permanent terra cotta construction, to cause the latter to become the universally accepted method of building.

Many comparisons of the cost of different types of construction have been undertaken. To present the matter in a form to be readily appreciated by even the untechnically trained reader, use is here made of a series of estimates recently taken. Five bids were submitted from responsible contractors located in or near Boston upon a house

that was actually built in this same vicinity. The house was 36 feet 6 inches by 29 feet deep, covering an area of 1058 square feet, with a small covered entrance porch and a covered piazza of 14 or 15 foot length and 7 or 8 foot width at one side. The house had four rooms upon the first floor and four sleeping rooms, with a bath and sewing room upon the second. A comparison of the average of the several bids for the different kinds of construction specified, resulted as follows:

Kind of Construction	*Average Cost*	*Percentage of increase*
House built of wood with clapboarded walls	$6,759.95	0
Of wooden construction with shingled walls	$6,868.80	1–6/10
Stucco on wooden construction	$6,952.90	2–9/10
Stucco on hollow tile	$7,187.65	6–3/10
Brick veneer over boarding	$7,226.44	6–9/10
A hollow brick wall 10" thick	$7,374.48	9–1/10
Brick veneer outside of hollow tile	$7,483.16	10–7/10
A 12" solid brick wall	$7,641.00	13

A comparison of these bids to establish a percentage of cost on the various types—starting with the first figure, on the clapboarded house, as O, is shown in the right hand column. By this it will be seen that the stucco on hollow tile construction costs but 6–3/10% more than the cheapest and most ordinary form of construction. It is true that none of these figures consider the possibility of making the dwelling still more permanent, with floors of terra cotta and a concrete surface; but the additional expense of doing this, in connection with the accompanying saving of finish, would make the nearly fireproof house cost not more than 10% or 12% over the lowest cost given on the table. It should be born in mind that different site locations will somewhat alter conditions as to labor, and will usually account for material differences in construction costs. As a rule, the expense of building in the vicinity of Boston is about the same as in the vicinity of Chicago; less than in the vicinity of New York and more than in many other sections of the country—such as in Minnesota, Illinois, Ohio, and particularly some portions of New England. Generally, labor costs are higher near large cities. On the other hand, those conditions that tend to reduce the cost of labor and material in some sections of the country may result in increasing the cost of the tile on account of additional freight charges, while a corresponding remoteness from a railroad or wharf where delivery could be made, requiring teaming over rough, heavy or hilly roads, would impose an additional item of expense that should be taken into account by those contemplating building in such localities.

THERE follows a series of attractive Double Houses which have been built of Natco Hollow Tile. These houses were designed by a group of well-known architects

Natco Hollow Tile Semi-Detached Houses at Forest Hills Gardens, L. I.

(Illustrated on opposite page)

AYMAR EMBURY II, ARCHITECT

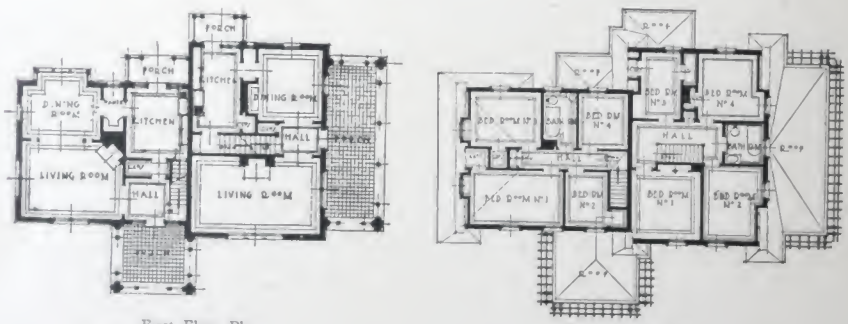
IN a surburban development, like that of the Sage Foundation at Forest Hills, Long Island, transit conditions, both as regards time and cost, constitute a powerful factor in determining the type of prospective purchaser and consequently both the size and quality of the dwellings that are erected. The larger number of houses erected in the first operation here are contiguous or block houses, sometimes on plots smaller than the usual city lot. The word "block" is used as meaning "small groups." Of course the reduction of the individual lot area is purposely made and carefully compensated for by larger public open spaces from which, in various ways, it benefits.

The semi-detached dwellings illustrated herewith were among the first buildings to be erected at Forest Hills. While the houses in this development vary greatly in size, arrangement, cost and architectural treatment, an attempt was made to make them alike in their domestic and livable character.

Natco Hollow Tiles were used for the exterior and party walls, finished with stucco. Each house has seven rooms and bath with ample space provided for halls, stairs, closets, etc. The interior finish is of hard wood in the principal rooms of the first floor and of white wood painted, in the bed rooms. Each house is supplied with electricity and gas. The heat is supplied by individual low pressure steam boilers. Entrance and porch of each house are so arranged in plan that the comfort and convenience of each owner is assured.

The study of this plan was directed towards solving the problem of the better use of land, from both its economic and its aesthetic viewpoint, rather than from the usual rectangular division.

The Sage Foundation is seeking to make its housing demonstrations expecially applicable to dwellings of low cost and rentals, but it is essential to the financial success of any such enterprise that the size and quality of the houses be suited to the value of the property upon which they are built. The character of the workmanship and the materials employed in the erection of these houses is the highest type consistent with reasonable economy.



First Floor Plan

Second Floor Plan

FLOOR PLANS OF HOUSES SHOWN ON OPPOSITE PAGE

SEMI-DETACHED HOUSES, FOREST HILLS GARDENS, FOREST HILLS, L. I.
Walls of Natco Hollow Tile with Stucco Finish
Aymar Embury II, Architect, 132 Madison Avenue, New York

Natco Hollow Tile Houses at Forest Hills Gardens, L. I.—Detached and Semi-Detached

(Illustrated on opposite page)

WILSON EYRE, ARCHITECT

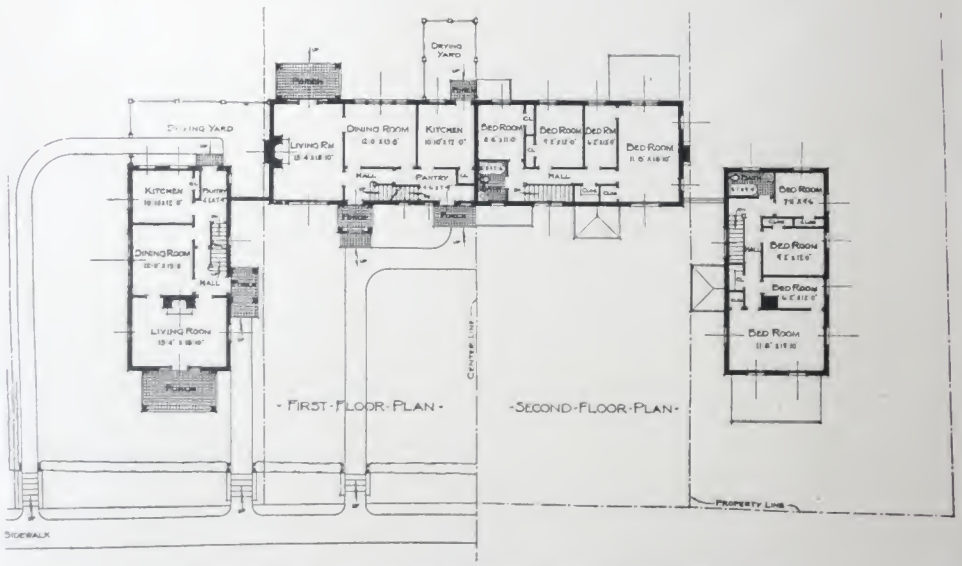
THOSE interested in the development at Forest Hills Gardens, L. I., hope to demonstrate that it is possible to develop a more attractive general plan and better types of houses than those commonly found in commercial land schemes. To this end they have built, among others, the houses illustrated on the opposite page. The entire group consists of four houses, two detached and two semi-detached. Each house has seven rooms and bath. This group is of a different type than that shown on preceding page and is part of the scheme of this development to cover as wide a range of styles as is permitted by the economic conditions, which necessarily determine also their distribution and location on property.

The designer of these houses has used Natco terra cotta hollow tile for the construction of exterior and party walls. The window openings are pleasingly grouped and the exterior walls kept straight and at right angles without losing any architectural distinction.

The walls are waterproofed both inside and out and are finished with a gray white stucco.

As a further prevention against fire the floors of these houses are built of Natco Hollow Tile and concrete beams and the roofs covered with slate. The foundations are concrete.

The houses are steam heated and arranged for both gas and electricity.



FLOOR PLANS OF GROUP OF HOUSES SHOWN ON OPPOSITE PAGE

DETACHED AND SEMI-DETACHED HOUSES, FOREST HILLS GARDENS, FOREST HILLS, L. I.

Walls of Natco Hollow Tile with Stucco Finish

Wilson Eyre, Architect, 1003 Spruce Street, Philadelphia, Pa.

A Natco Hollow Tile—Brick Veneer Semi-Detached House, Forest Hills Gardens, L. I.

(Illustrated on opposite page)

GROSVENOR ATTERBURY, ARCHITECT

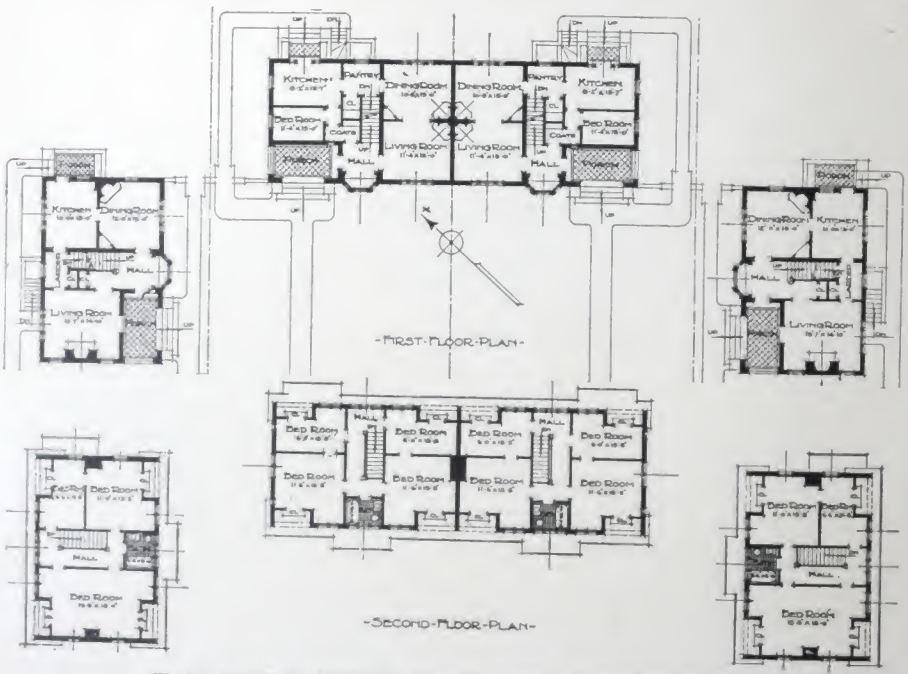
BRICK will always remain a favorite material for the inexpensive dwelling and when it is used as a facing material with a backing of Natco Hollow Tile it makes an even warmer house in winter than a solid brick wall. The pleasing colors, textures and design of a brick wall added to the various advantages of Natco Tile backing makes an ideal construction for a house.

In the striking example of this method of building illustrated on opposite page we find the brick veneer applied to a house built of Natco Hollow Tile. The hollow tile in this case is used as a backing up for the brick veneer. The brick is tied into the wall with a full header every tenth course which is backed up with a row of hollow brick. All other courses have bats or half headers butting up against the tile. In this manner the tile and the brick are tied in an absolutely rigid manner The roof is of slate assuring a certain additional safety from fire coming from outside the dwelling.

The use of brick veneer, provides a still more permanent surface than plaster.

The houses each have eight rooms and bath, the servants bed room being on ground floor near the kitchen.

The houses are wired for gas and electricity and heated by steam.



FLOOR PLANS OF GROUP OF HOUSES SHOWN ON OPPOSITE PAGE

SEMI-DETACHED HOUSE, FOREST HILLS GARDENS, FOREST HILLS, L. I.

Walls of Natco Hollow Tile with Brick Veneer

Grosvenor Atterbury, Architect, 20 West 43rd. Street, New York

A Natco Hollow Tile Semi-Detached House, Ivy Court, Orange, N.J.

(Illustrated on opposite page)

MANN & MacNEILLE, ARCHITECTS

IN any considerable grouping of suburban houses, a great aid to picturesque treatment will be found in the use of twin or semi-detached houses. There is a real saving in cost of land and house where this can be done, and about as much light and air can be obtained from a forty foot plot of ground as with fifty feet for a single house, but local customs must be consulted. What is common usage in and around one city, for example, may not be attractive in another.

In the illustration presented, it was found that estimates of cost indicated that two rather larger twin houses at less cost could be built on a plot of ground with a frontage of eighty feet than two single houses on fifty feet each The design was carefully studied so as to bring entrances entirely separate and front piazzas rather farther apart than in single houses. Place was found for a reception room on the first floor and a child's room on the second floor in addition to four sleeping rooms, which with two attic rooms gives a large house of this type.

The construction is of Natco Hollow Tile with stucco exterior, finished in gray cement spatter dash. The roof is covered with variegated slate. The interior floors are also of hollow tile with reinforced concrete beams and partitions of tile. The halls are floored with Welsh quarry tile, kitchens and pantries with cement covered with linoleum. The first floors are trimmed with chestnut. Especially designed mantels and stairs with different detail are provided in each house.

There is a great personal comfort and satisfaction in living in such a house. The heaviest winds have not the slightest effect on it. There is no settlement and consequent cracking, and the repairs in the way of painting are confined to a small amount of exterior trim.

The cost of tile for exterior walls is probably about 5% more than walls of good ordinary wooden construction. Partitions and floors of hollow tile make a rather larger first cost, probably about 10% additional.

Design submitted by Howard A. Goodspeed,
5 Wolcott Street, West Medford, Mass.

A SEMI-DETACHED HOUSE, IVY COURT, ORANGE, N. J.
Walls and Floors of Natco Hollow Tile
Mann & MacNeille, Architects, 70 East 45th Street, New York

A Natco Hollow Tile Semi-Detached House Forest Hills Gardens, L. I.

(Illustrated on opposite page)

J. T. TUBBY, JR., ARCHITECT

THE exterior walls of this house are built of Natco Hollow Tile construction upon foundations of solid concrete. The walls are finished on the first story in a gray stucco embellished with insert panels of mosaic and on the second story with a combination of brick, stucco and half timer work.

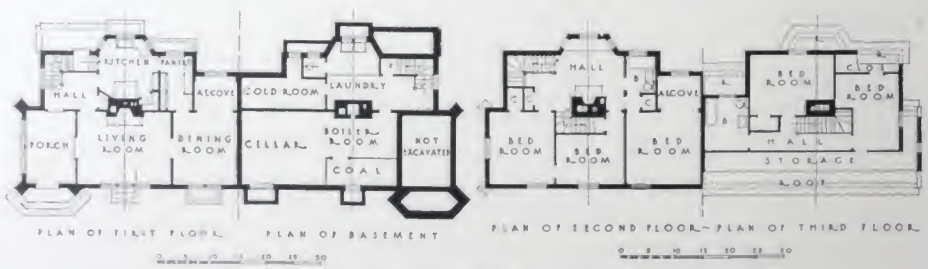
The roof is covered with tile.

The scheme of plan involves a long axis through the dining room, living room and porch, the long axis of the living room being upon this line. The fireplace in the living room is placed on the short axis at right angles to the vista. It was felt that the wall at each side of the fireplace should be without the usual glare of light to disturb the view of the fire. Accordingly it was set on the center of the house with the kitchen on axe with it. The position of the pantry and its relation to the dining room, the position of the stairs and its relation to the hall are the correlaries of this motif.

Use is made of the space over the kitchen as a second floor sitting room, a departure from the competition drawings made possible by the addition of the third floor with rooms and bath for servants in that portion of the house.

An experiment which it is hoped may lead to tangible results has been tried in the use of concrete mosaic panels inlaid in the surface of the stucco of the exterior. A series of moulds was made, and concrete tiles of finer aggregate than for walls were cast in these moulds. This work was done by a firm making architectural plaster casts. The tesserae were built into the stucco by the general contractor.

An attempt has been made to follow the principles laid down by Mr. Ross in the use of similar shapes of rectangles for window panes, gable rake, concrete panels, composition of windows. It is manifestly difficult to discover in what measure this lends harmony to the design, but it may perhaps be admitted by most readers that it slightly affects the result. Apparently it is one of the principles that persuades some of our best architects to give harmony to windows by the constant repetition of the same size lights, or by lights of a uniform shape.



FLOOR PLANS OF HOUSE SHOWN ON OPPOSITE PAGE

SEMI-DETACHED HOUSE AT FOREST HILLS GARDENS, FOREST HILLS, L. I

Walls of Natco Hollow Tile with Stucco and Brick Finish

J. T. Tubby Jr., Architect, 81 Fulton Street, New York

A Natco Hollow Tile Semi-Detached House Boston, Mass.

(Illustrated on opposite page)

KILHAM & HOPKINS, ARCHITECTS

THE outside walls of this house are built of Natco Hollow Tile construction. The tile walls are plastered on the outside with a cement stucco with a dash coat texture which harmonizes with the other buildings which adjoin it. The house has a light sea-green slate roof flashed and made tight with copper throughout. All the gutters are hung to prevent any chance of water getting in through the eaves of the house. The walls being hollow, the inside plaster is done directly on the backs of the tiles. The air space obtained by the use of hollow tile acts for warmth in winter and coolness in summer. This form of construction has the advantage over the house built of solid material inasmuch as there is a decided saving by not having to provide furring strips for the inside plaster. The Boston Dwelling House Company who built these semi-detached houses have demonstrated that there is much economy in this type of dwelling as well as maximum amount of comfort assured the tenants. The combining of party walls and the securing of standardized fittings mean a decided reduction in the cost of material over other methods of construction and therefore, when honestly devised by men seeking to alleviate bad conditions of housing, result in much lower cost to an investor and much cheaper rents for tenants. The semi-detached house offers space for lawns and gardens, front and back, that the homebuilder or tenant is not likely to secure in other types except the single house.

The living rooms and halls are painted in white enamel. Especial attention has been given to the design of the staircases and interior trim.

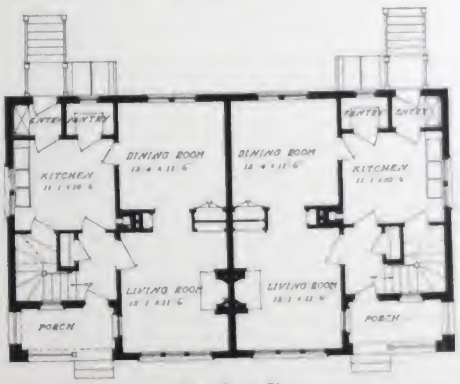
A Natco Hollow Tile Semi-Detached House

(Illustrated on page 78)

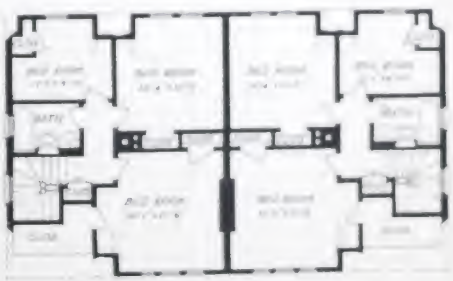
FRANK CHOUTEAU BROWN, ARCHITECT

THE adaptable form in which Natco Hollow Tile is now manufactured has effected a marked difference in the building industry. The comparative inexpense and permanent qualities of this material have encouraged architects to recognize its many advantages. The design for a semi-detached house shown on the back of the opposite page is an example of the possibilities of this material where good design and construction are combined. The house is built of terra cotta tile plastered upon both the exterior and interior surfaces. The designer of this building has studied the advantages latent in hollow tiles for the construction of inexpensive dwellings, and has developed a plan which is both practical and pleasing.

When we consider this house built in a somewhat remote country location we realize the paramount advantage of a building material which is a prevention against fire. The plaster house, the walls of which are built of Natco Hollow Tile, is the most permanent and satisfactory. Such a house wall is fireproof, has all the advantages of the solid brick wall at a considerable saving in expense and, by the two air spaces it provides, the interior of the house is more thoroughly insulated from extremes of temperature existing without.



First Floor Plan



Second Floor Plan

SEMI-DETACHED HOUSE, FOREST HILLS, BOSTON, MASS.

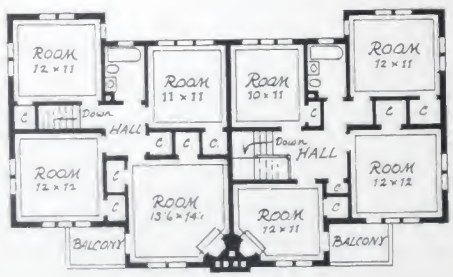
Walls of Natco Hollow Tile, faced with Stucco

Kilham & Hopkins, Architects, 9 Park Street, Boston, Mass.

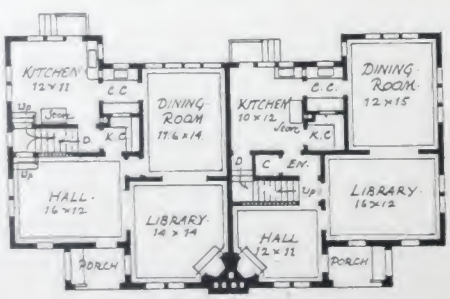
A SEMI-DETACHED TILE HOUSE

FRANK CHOUTEAU BROWN
ARCHITECT BOSTON
NINE PARK STREET

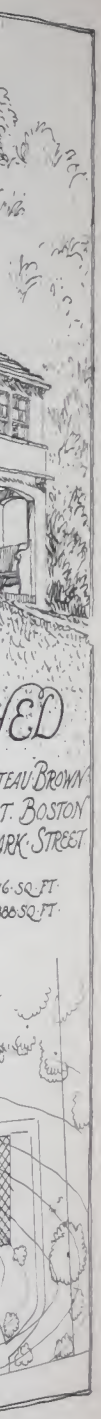
TOTAL AREA 1776 SQ FT
EACH HOUSE 888 SQ FT



SECOND FLOOR PLAN



FIRST FLOOR PLAN



Natco Hollow Tile

NATCO Hollow Tile for residences is the highest attainable grade of the same terra cotta material that gives to sky scrapers really fire safe construction. These tiles are necessarily of different form and size to meet the requirements of strictly bearing walls. This difference is clearly shown by a description of Natco's latest development—the tile known as

NATCO XXX

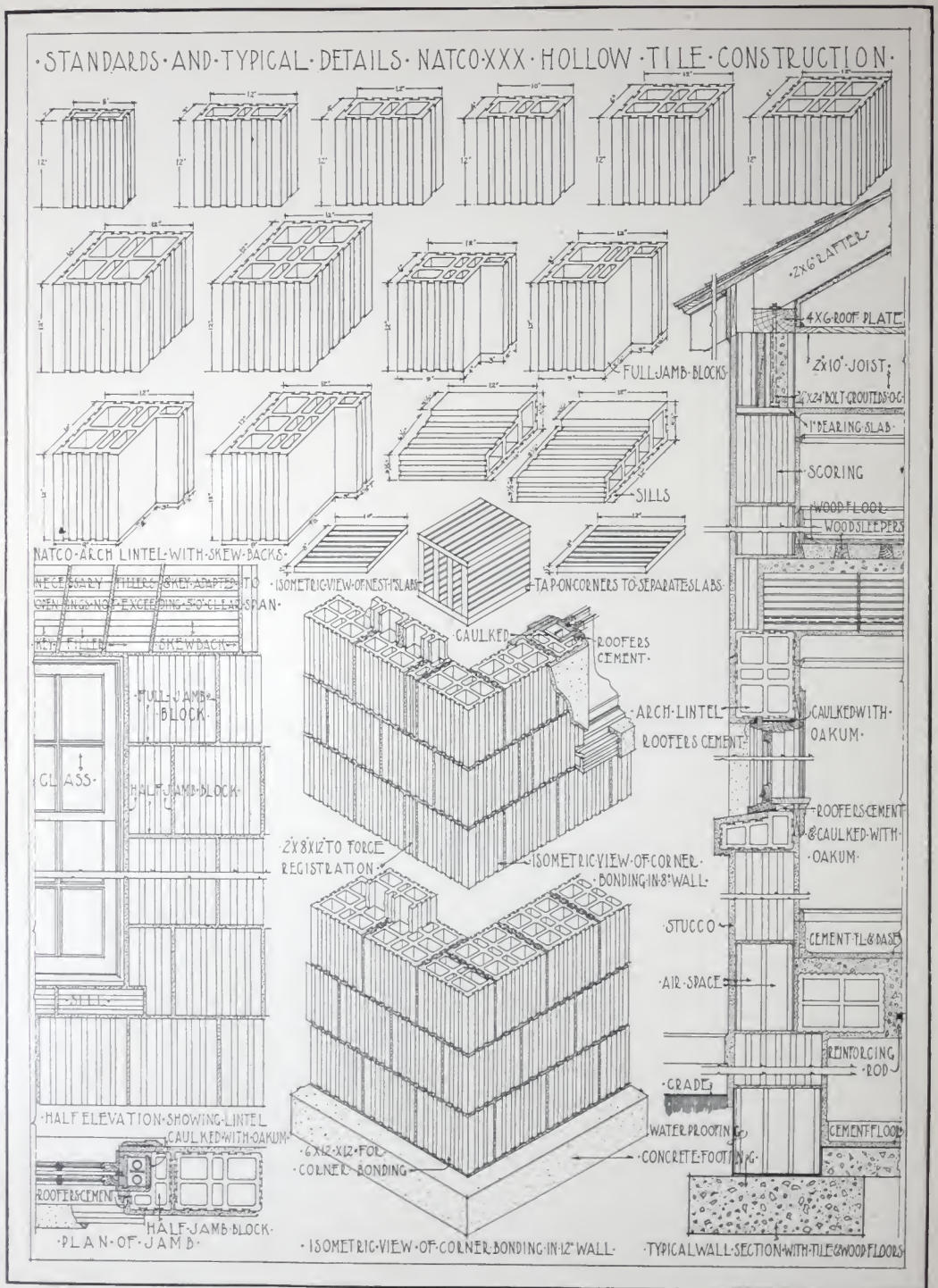
Natco XXX, unlike any other Hollow Tile, has a double cross web. Because of this improvement, every web and shell of every Natco XXX Tile as set in exterior and bearing walls, comes in direct alignment and under complete compression. The Natco XXX wall represents the utmost in structural solidity and strength.

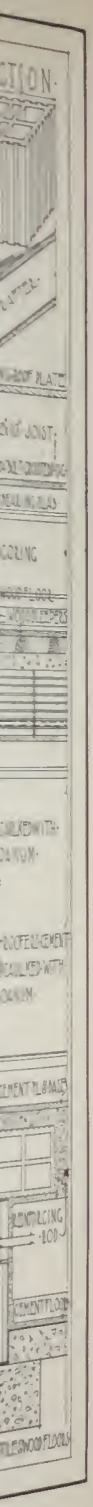
The advantages of Natco construction are very generally understood today. Natco Hollow Tile is a material that cannot burn. Neither can dampness, climate, temperature, or age cause the slightest deterioration.

The Natco house or building needs no painting and repairing. It is warmer in winter, cooler in summer, because the Natco Hollow Tile blankets the structure with an insulation of dead air and the material itself does not take in heat, the cold, or the moisture, as does wood, brick, or stone. It affords no entrance to vermin. Lastly and most important of all, it is fireproof in the complete sense of the term.

The residences shown here with plans have been selected simply as typical of Natco's use in moderate sized buildings. Natco Hollow Tile lends itself to any style of architectural treatment, and its variety of correctly designed tiles allows for its use not only in bearing walls but floors, partitions and roof.

Be sure to secure the genuine Natco Hollow Tile. It may always be distinguished from its inferior imitations by the trademark, "Natco,"—pressed into every tile of genuine Natco Hollow Tile.


STANDARDS AND TYPICAL DETAILS NATCO XXX HOLLOW TILE CONSTRUCTION
NATCO ARCH LINTEL WITH SKEW BACKS
NECESSARY FILLER PIECE ADAPTED TO OPENING NOT EXCEEDING 5'0" CLEAR SPAN
KEY FILLER
SKEW BACK
FULL JAMB BLOCK
GLASS
HALF JAMB BLOCK
HALF ELEVATION SHOWING LINTEL
CAULKED WITH OAKUM
ROOFERS CEMENT
HALF JAMB BLOCK
PLAN OF JAMB
ISOMETRIC VIEW OF NESTING SLABS
TAPON CORNERS TO SEPARATE SLABS
FULL JAMB BLOCKS
SILLS
CAULKED
ROOFERS CEMENT
ARCH LINTEL
ROOFERS CEMENT
2X8X12 TO FORCE REGISTRATION
ISOMETRIC VIEW OF CORNER BONDING IN 8" WALL
6X12X12 FOR CORNER BONDING
ISOMETRIC VIEW OF CORNER BONDING IN 12" WALL
2X6 RAFTER
4X6 ROOF PLATE
2X10 JOIST
2X24 BOLT GROUTED 8'0 C
1" BEARING SLAB
SCORING
WOOD FLOOR
WOOD SLEEPERS
CAULKED WITH OAKUM
ROOFERS CEMENT & CAULKED WITH OAKUM
STUCCO
CEMENT FILL & BASE
AIR SPACE
REINFORCING ROD
GRADE
WATER PROOFING
CONCRETE FOOTING
CEMENT FLOOR
TYPICAL WALL SECTION WITH TILE & WOOD FLOORS



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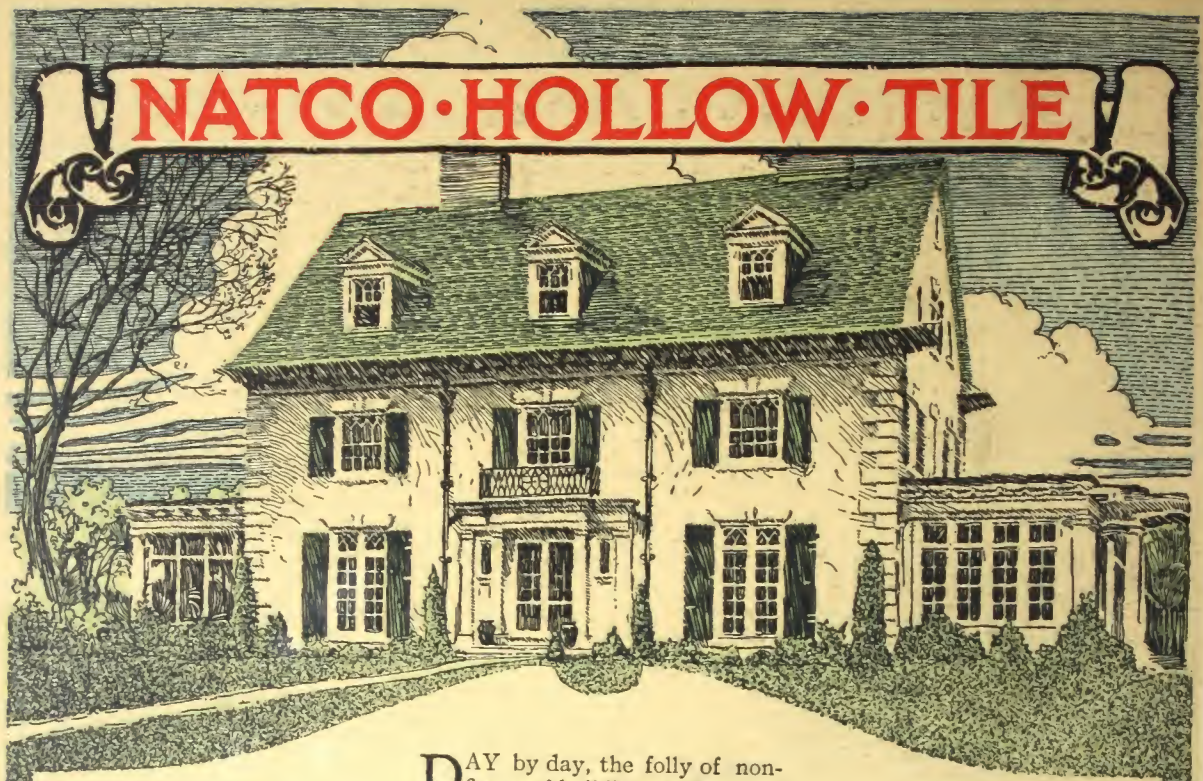
NATCO·HOLLOW·TILE



DAY by day, the folly of non-fireproof buildings and houses becomes more and more widely recognized — their erection more severely condemned. You attain fire safety in its highest form, when you build of

NATCO·HOLLOW·TILE

Fireproof, age-proof, damp-proof, vermin-proof; warmer in Winter cooler in Summer

Investigation of the merits of Natco Hollow Tile and comparison with older materials invariably dictates Natco Hollow Tile construction—for partitions, floors and roof, as well as exterior walls.

Whatever the building's purpose, size, proposed cost — the advantages all lie on the side of Natco Hollow Tile construction, a construction that anticipates and eliminates all that fire and time can do to destroy or depreciate the structure.

The important word to remember is "Natco." The only genuine Natco Hollow Tile is the hollow tile that bears, pressed into the blocks, the trademark "Natco."

Before defining your building plans, send for our 64-page handbook, "Fireproof Houses," fully describing, with illustrations, every detail and phase of NATCO construction. Contains 80 photographs of NATCO buildings. Mailed anywhere for 20 cents to cover postage.

NATIONAL·FIRE·PROOFING·COMPANY

PITTSBURGH, PENNSYLVANIA